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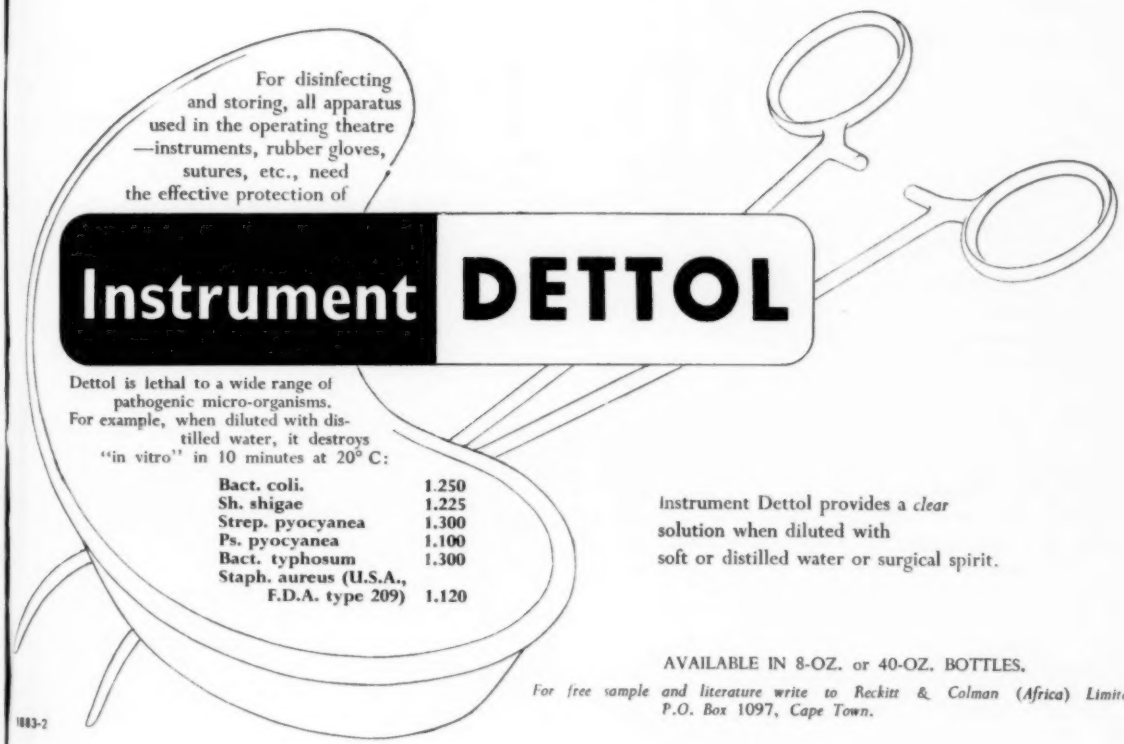
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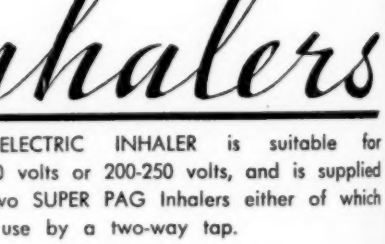

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A CASE OF CARDIAC ARREST DUE TO TRACTION-REFLEX

OCCURRING TWICE DURING THE SAME OPERATION

R. B. KIHN, M.B., CH.B.

Department of Surgery, Groote Schuur Hospital, Cape Town

Traction-reflexes are a frequently acknowledged cause of cardiac arrest (Dale—1952, Gebode, Lea and Herrod—1954). The following case seems to be an example of this type.

CASE REPORT

A gastrectomy for carcinoma of the pylorus was being performed on a Coloured male aged 60 years. His weight was 135 lb. Anaesthesia was induced with thiopentone (2½%), 250 mg. and continued with nitrous oxide, oxygen and ether, an endotracheal tube being used. A total of 60 mg. of gallamine triethiodide was given just after the commencement of the operation, in divided doses over a period of 5 minutes, including a preliminary test-dose of 20 mg., which had no abnormal effect. The patient settled on this and maintained an easily palpable radial pulse and a blood pressure of 120 mm. Hg (systolic) for a period of 10 minutes.

At this stage the surgeon exerted traction on the stomach in order to expose and ligate the left gastric artery. Immediately the blood pressure fell to a systolic level of 75 mm. Hg. It remained at this level for a few minutes, and then the pulse became irregular at a slow rate and, within a quarter of a minute, was impalpable. All anaesthetic agents were discontinued and 100% oxygen administered.

The patient was now found to have no palpable carotid pulsation. The surgeon ascertained that the aorta and the heart were not pulsating and entered the chest through the 4th left intercostal space and commenced direct cardiac massage. Adrenaline, 1½ ml. 1 : 1000 was injected into the left ventricle and 15 mg. of methylamphetamine hydrochloride administered intravenously and, within 2 minutes of commencing massage, the heart began beating again at a regular rhythm and a rate of 120-140 per minute. Blood pressure rose rapidly to 80 mm. Hg (systolic).

The chest wound was closed and as the duodenum had been cut across it was decided to proceed with the operation, which was re-commenced 8 minutes after the heart had resumed its action.

The surgeon once more exerted traction on the stomach to conclude the ligation of the left gastric artery and immediately the patient again became pulseless at the radial and carotid arteries and at the aorta. The chest was at once re-opened. The heart muscle showed a fine fibrillation but no effective contractions. Massage was once again commenced by the surgeon while the assistant compressed the aorta to ensure adequate cerebral circulation. An injection of 10 ml. of 10% calcium chloride was made into the left ventricle, and 3 minutes afterwards 5 ml. of 1% procaine. One minute later the fibrillatory movements changed into regular rapid contractions with faint carotid pulsation synchronous with the heart beat, although no blood pressure could be recorded. An intravenous infusion of noradrenaline (4 ml. in 700 ml. of 5% dextrose in water) was commenced. With regulation of the rate of noradrenaline administration the blood pressure was raised to 100-110 mm. Hg (systolic), where it was kept for the remainder of the operation, which was concluded uneventfully.

During the massage carotid pulsations could be felt, indicating a maintenance of effective cerebral blood-flow.

COMMENT

There are varying opinions whether anoxia is necessary for the effect of a traction reflex, and whether a traction reflex is a valid explanation for cardiac arrest.

Sloan (1950) was unable to cause cardiac arrest in dogs by stimulation of the vagus unless the animals were severely hypoxic or asphyxiated and concluded as follows: 'If these experiments on dogs have any application to cardiac arrest in the human being during operation, they suggest that under conditions of adequate oxygenation reflex inhibition of the heart by stimulation of the vagus nerve does not result in cardiac arrest. In the presence of severe hypoxia or asphyxia, perhaps unrecognized, vagal reflexes would provide an additional inhibitory factor that might lead to temporary cardiac arrest and circulatory collapse.'

Reid, Stephenson and Hinton (1952) state that as there are no vagal fibres in the ventricle no stimulus can cause a general collapse, because the specific tissue in the ventricle can form stimuli and function autonomously. They maintain, however, that anaesthesia depresses the capacity of the specific tissue to form stimuli, which then behaves as though there were independent areas of non-functioning tissue. They insist that anoxia *per se* does not cause sudden cardiac standstill but leads to a change in rate, tachycardia, poor pulse and, if persistent, a gradual slowing and stopping of the heart beat.

'The precise role of anoxia appears to be that while it alone cannot cause a vago-vagal reflex nevertheless it potentiates the action of the anaesthetic agent so that the net result is further decrease in the capacity of the specific tissue to form stimuli'.

The same authors (1953), in a preliminary review of a series of 1,200 cases of cardiac arrest, list precipitating causes commonly felt to be favourable for the production of a vago-vagal reflex, which in this series were almost immediately followed by a sudden cessation of the normally beating heart. Out of 156 such cases 41 occurred during the insertion of an endotracheal tube, 19 during tracheal suction through such a tube, and 16 at the time of extubation. Of the remainder, 14 cases occurred at the time of direct contact or cutting of the vagus nerve in the chest, 12 cases occurred at the time of applying a purse-string to the hilus and 12 during dissection at the hilus, and 10 cases occurred while downward traction on the stomach was being applied.

As the two episodes of cardiac arrest now reported occurred during the course of the same operation, on the same patient, while the same traction forces were in effect, and while the patient was adequately oxygenated, the causal relationship seems particularly likely.

I wish to thank Dr. N. G. Cloete, Superintendent of Groote Schuur Hospital, and Mr. L. Chanock for permission to publish this case and Dr. C. S. Jones, Head of the Department of Anaesthesia, for his criticisms.

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South African Medical Journal

Suid-Afrikaanse Tydskrif vir Geneeskunde

VAN DIE REDAKSIE

DIE GENETIESE GESLAG EN DIE ETIOLOGIE VAN DUBBELSLAGTIGHEID

Twyfelagtige geslagsontwikkeling is nie ongewoon nie. Deur gebruik te maak van huidgeslagsbepalingmetodes of deur verskillende vorms van kerngeslagsbepalingtegnieke op die wit bloedliggaampies toe te pas, of deur 'n skedesmeer, kan die ware aard van die onderliggende abnormaliteit baie makliker toegelig word. Hierdie jongste vordering is onlangs in redaksionele artikels bespreek.[1, 2]

Huidige menings oor die patogenese van dubbelslagtigheid kan volgens die waarskynlike etiologie opgesom word. Miskien behoort ons eers die onvrugbaarheid van die teelkliere (‚onontwikkeldheid van die eierstok') te oorweeg. In hierdie toestand ontwikkel die geslagskliere nie verder as die primitiewe geslagsriffeltjie nie, sodat hulle nòg androgeen nòg estrogeen produseer. Omdat intrauterien-androgeen nodig is vir die ontwikkeling van die manlike geslagsorgane, volg dit dat algehele vervrouliking plaas sal vind, wat ook al die genetiese geslag van die pasiënt mag wees. Die neutrale vorm is die vroulike een. Teelklier-onvrugbaarheid met manlike huidgeslag mag derhalwe as 'n uiterse vorm van manlike skyndubbelslagtigheid beskou word, waar die embrio, voortbestem om geneties manlik te wees, van sy geboortereg ontneem word as gevolg van vroeë intrauterien-teelklier-tekortkoming.

Grumbach *et al*[3] het aan die hand gedoen dat gewone manlike skyndubbelslagtigheid te wyte is aan intrauterien-teelkliermislukking op 'n effens latere stadium, wanneer definitiewe testikelweefsel gevorm is en die oernierkanaal van Wolff tot 'n sekere mate tekens toon van ontwikkeling in 'n manlike rigting. Mislukking van die teelkliere op hierdie stadium veroorsaak gedeeltelike vervrouliking. Ongelukkig vir hierdie teorie, ontwikkel die manlike skyndubbelslagtige dikwels 'n manlike puberteit op die gewone ouderdom. As intrauterien-teelkliergebrek voorgekom het, is so 'n puberteit inderdaad moeilik om te verklaar.

Vroulike skyndubbelslagtigheid is byna altyd te wyte aan oorproduksie van androgeen deur die bynierskors, wat genetiese vrouens gedurende die intrauterien-ontwikkeling aantas. Die kernpatroon behoort van die vroulike tipe te wees. Daar is egter sommige gevalle van vroulike skyndubbelslagtigheid beskryf wat geen oormaktiwiteit van die bynierskors toon nie. Barr het 'n geval met manlike velgeslag[4] gevind. Hy verklaar egter

EDITORIAL

THE GENETIC SEX AND THE AETIOLOGY OF HERMAPHRODITISM

Ambiguous sexual development is not uncommon. The elucidation of the true nature of the underlying abnormality is greatly facilitated by the use of skin sexing methods, or variants of the nuclear sexing technique applied to leucocytes or a vaginal smear. This recent advance has been discussed in previous editorials.[1, 2]

Current views on the pathogenesis of hermaphroditism may be summarized according to the probable aetiology. First we should perhaps consider gonadal dysgenesis ('ovarian agenesis'). In this condition the development of gonads does not progress further than the primitive genital ridge, so that neither androgen nor oestrogen can be produced from them. Because development of the male sexual apparatus requires intra-uterine androgen, it follows that, whatever the genetic sex of the patient, complete feminization results. The neutral form is the female one. Gonadal dysgenesis with male skin-sex may therefore be considered as an extreme form of male pseudo-hermaphroditism, in which the embryo, destined for maleness genetically, is deprived of its birthright by early intra-uterine gonadal failure.

Grumbach *et al.*[3] have suggested that ordinary male pseudo-hermaphroditism is caused by intra-uterine gonadal failure at a slightly later stage, when definitive testicular tissue has been formed and a certain amount of differentiation of the Wolffian ducts along male lines has taken place. Failure of gonads at this stage then produces partial feminization. Unfortunately for this theory the male pseudo-hermaphrodite frequently develops a masculine puberty at the usual age. If intrauterine gonadal failure had occurred, such a puberty is indeed difficult to explain.

Female pseudo-hermaphroditism is almost always due to adrenocortical overproduction of androgens affecting genetic females during intra-uterine life. The nuclear pattern should be of the female type. However, some cases of female pseudo-hermaphroditism have been described who show no adrenocortical overactivity. Barr has found a case with male skin-sex.[4] He fails to

nie hoedat genetiese manlikes eierstokke ontwikkel nie.

Daar word tans gemeen dat 'n genetiese afwyking die basiese defek in ware dubbelslagtigheid is. Daar is geen sekerheid oor die geslagschromosoompatroon wat by hierdie pasiënte aangetref word nie, maar die gedagte is dat dit XXY kan wees, waar die eiersel met sy enkele X-chromosoom, miskien deur saad wat beide X- en Y-chromosome bevat, bevrug word. Die feit dat die X-chromosoom groter is as die Y, verklaar miskien waarom kerngeslagsbepalingtegnieke die XX-patroon in vrouens maklik uitken terwyl die teenoorgestelde geld vir die XY in mans. Dus, as ware dubbelslagtigheid 'n XXY-patroon het, behoort dit ten minste net so maklik soos die XX gesien te word en alle sulke pasiënte behoort ‚vroulike' kernstrukture te toon. Barr self het die velgeslagsbepaling op 12 ware dubbelslagtiges toegepas—8 van hulle het vroulike kerntipes en 4 van hulle het manlike kerntipes getoon (Money *et al.*[5]).

Hierdie bevinding is onversoenbaar met die XXY-teorie van ware dubbelslagtigheid—òf die metode van velgeslagsbepaling is foutief òf daar moet 'n ander chromosoompatroon bestaan. Miskien het sommige gevalle 'n enkele X-chromosoom of miskien ontbreek die geslagschromatien geheel en al. Hulle patroon sal dan dié wat by gewone mans aangetref word, naboots, soos deur Barr[3] gesuggereer is.

Ten slotte moet melding gemaak word van 'n nuwe en onverwagte tipe van tussengeslag wat onafhanklik deur verskeie groepe navorsers ontdek is. Daar is gevind dat sommige persone met volledige en normale manlike intrauterien-ontwikkeling, wat later bewys van hipogonadisme (met of sonder eunochoidismus) lewer, die vroulike kernpatroon besit. Met belangstelling word gewag op verdere navorsing i.v.m. hierdie onderwerp.

1. Van die Redaksie (1956): S. Afr. T. Geneesk., **30**, 285.
2. Van die Redaksie (1955): *Ibid.*, **29**, 809.
3. Grumbach, M. M., Van Wyk, J. J. en Wilkins, L. (1955): J. Clin. Endocr., **15**, 1161.
4. Barr, M. L. (1954): Surg. Gynec. Obstet., **99**, 184.
5. Money, J., Hampson, J. G. en Hampson, S. M. (1955): Bull. Johns Hopk. Hosp., **97**, 284.

explain how genetic males happen to develop ovaries.

In true hermaphroditism the basic defect is currently held to be a genetic aberration. The pattern of sex chromosomes which exists in these patients is not known with certainty, but it has been thought to be XXY, where the ovum, with its single X chromosome, is perhaps fertilized by sperms containing both X and Y chromosomes. Now the fact that the X chromosome is larger than the Y is thought to account for the ready visibility of the XX pattern of females, as opposed to the XY of males in the nuclear sexing technique. Therefore if true hermaphrodites have an XXY pattern, this should be seen at least as easily as the XX, and all such patients should show 'female' nuclear structures. Barr himself has 'skin-sexed' 12 true hermaphrodites—8 of these showed female type of nuclei, and 4 male (Money *et al.*[5]).

This finding is irreconcilable with the XXY theory of true hermaphroditism. Either the sexing method is at fault, or some other chromosomal pattern must exist. Perhaps some cases have a single X chromosome or even complete absence of sex chromatin. Their pattern would then simulate that found in normal males, as has been suggested by Barr.[3]

Finally, a new and unexpected type of intersex has been discovered independently by several groups of workers. Some persons with complete and normal male intra-uterine development who later show evidence of hypogonadism (with or without eunuchoidism) have been found to have the female nuclear pattern. Further work on this subject is awaited with interest.

1. Editorial (1956): S. Afr. Med. J., **30**, 285.
2. Editorial (1955): *Ibid.*, **29**, 809.
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NEONATAL HEPATITIS

C. ISAACSON, M.B., B.CH. (RAND)

Registrar Pathologist, South African Institute for Medical Research, and Baragwanath non-European Hospital, Johannesburg

The entity of neonatal hepatitis has aroused increasing interest in recent years. Several theories of aetiology have been proposed, including a hepatotoxic agent, an inborn error of metabolism, and blood incompatibility.

In 1952 Craig and Landing[1] described a series of cases of jaundice occurring immediately after birth or in the early neonatal period. These infants showed hepatomegaly, acholic stools, and in some instances a bleeding tendency. There was generally an elevated serum-bilirubin, with bilirubin in the urine. Rh incompatibility could not be demonstrated nor was there any evidence of syphilis. Results of liver flocculation-tests were variable. At laparotomy or autopsy the livers were generally enlarged, smooth, non-nodular and bile-stained. In every case the biliary tracts were patent. On microscopic examination of the liver, the outstanding feature was the presence of numerous multinucleated giant parenchymal cells, up to 400μ in diameter and containing as many as 20 nuclei. Some contained bile droplets and many showed degenerative changes in the nuclei and cytoplasm. There was preservation of the general architecture and absence

of bile-duct dilatation or regenerative parenchymal nodules. The portal tracts showed moderate infiltration by lymphocytes, eosinophils and polymorphonuclear leucocytes. There were large amounts of intracellular bile and the Kupffer cells were swollen and often filled with bile. The sinusoids showed foci of erythropoiesis. In one case of a patient who died at 2 years 9 months of age, the liver showed on section advanced cirrhosis with infarctive necrosis and numerous regenerating nodules. They concluded that the features were those of a hepatitis, and suggested that the absence of the typical histological appearances of viral hepatitis, viz. widespread central necrosis and complete destruction of the liver cells of the lobule, was related in some manner to the blood supply and resistance of infant livers to autolysis.

Dible *et al*[2] described 8 similar cases, of which 2 were in siblings. Their macroscopic and histological findings were essentially similar to those of Craig and Landing, but differed in finding islets of regenerating liver-cells. They commented on the maturity of the lesions and the short period of survival, and concluded that the disease almost certainly developed *in utero* and that the histological features were those of a hepatitis, the multinucleated giant-cells being the manifestation of active regeneration and proliferation in an infant's liver. The iron deposits, they felt, were due to liver-cell dysfunction and an inability to retain the iron in organic chemical combination, and not to an absolute increase in the amount of iron present, since the weight of iron in the dried tissue was not excessive. They also suggested that in some cases juvenile cirrhosis might be a sequel to neonatal hepatitis and, further, that many cases diagnosed as congenital obliteration of the bile-ducts were in fact cases of neonatal hepatitis. Although the aetiology was obscure, they were in favour of a viral causative agent and suggested that the most likely incriminating virus was that of serum jaundice (hepatitis virus B).

Smetana and Johnson[3] described 11 cases which they called 'jaundice of the neonatal period with giant-cell transformation of liver cells'. They suggested that the clinical and histopathological changes could be assigned to failure of development of the intercellular bile-canaliculi which normally link the liver cells with the efferent bile-passages. Microscopically they found replacement of normal liver-cells by multinucleated giant-cells, lack of intercellular bile-canaliculi, and absence of bile from the efferent biliary passages and intestine. They concluded that although bile was being formed normally, it was accumulating in the giant liver-cells and Kupffer cells.

Bowden and Donohue[4] reported 8 cases of giant-cell hepatitis. On section of the livers they found diffuse disorganization of intralobular architecture, although the lobular pattern was usually discernible. Liver cells were replaced by bizarre, multinucleated giant-cells, and areas of haemopoiesis were prominent. They suggested that the disease may be due to transplacental transmission of hepatitis virus (A or B) or, alternatively, that it may be due to some inborn error of metabolism, particularly in those cases in which successive siblings were affected.

Krainin and Lapan[5] reported an instance of neonatal hepatitis in siblings. Liver function tests performed on the mother showed evidence of damage and a liver biopsy showed what they designated Grade-I liver-damage, with variation in the size of the liver-cell nuclei and a fine, granular stippling of the cytoplasm. The Coombs test on the mother was negative. In considering the aetiology they pointed out that blood-group incompatibility can exist in the presence of a negative Coombs test, and that in favour of an erythroblastic origin of the disease is the fact that none of the reported siblings was the first-born. They suggested that the aetiology might lie in some genetic factor linked to blood groups causing an inherent liver-cell defect and an inborn error of iron metabolism.

Roth and Duncan[6] reported a case of primary carcinoma of the liver following neonatal hepatitis in a child aged 2 years 9 months.

DISCUSSION

The evidence that neonatal hepatitis is due to transplacental transmission of a hepatotoxic virus is accumulating. Stokes[7] emphasized that people without any history of jaundice or liver disease may harbour the virus of serum hepatitis. More recently he and his co-workers[8] also demonstrated by inoculation into volunteers, the presence of hepatitis virus B in the blood of 3 persons and of hepatitis virus A in the faeces of 2. They also reported the case of a child with neonatal hepatitis who was born by Caesarian section and was never breast-fed, thus ruling out the possibility of infection through the birth canal or transmission by breast milk. They believed the most probable pathway of infection was transplacental, although the mother had no history of liver disease. Injection of the mother's and infant's serum into each of 5 volunteers produced clinical and laboratory evidence of hepatitis in 2 of those receiving the infant's serum, 100 and 75 days respectively after inoculation, and in 3 receiving the mother's serum, at an average of 87 days after the injection. The child subsequently died at the age of 18 months, and at autopsy showed advanced cirrhosis of the liver. They repeated the injection of the mother's serum into a further 5 volunteers 3 years later and produced hepatitis in 3.

Norris *et al*.[9] showed that some carriers of viral hepatitis may repeatedly give normal hepatic function tests. They demonstrated the presence of the carrier state of viral hepatitis in 5 out of 22 donors whose blood had caused clinical hepatitis in 14 recipients.

There is also fairly convincing evidence that if neonatal hepatitis is due to transplacental transmission of a hepatitis virus it is unlikely that the virus of infectious hepatitis (virus A) is to be incriminated. Hsia *et al*.[10] showed that infants born of mothers with infectious hepatitis contracted during pregnancy did not develop the disease, and various investigators have shown that immune antibodies develop rapidly with infectious hepatitis,[11] thus making maternal transmission more difficult. Drake *et al*.[12] reported that most persons do not appear to develop antibodies to homologous serum-virus and can thus become silent carriers. Gellis

et al.[13] quoted an interesting report of siblings. The first displayed the typical features of neonatal hepatitis, the second was perfectly normal and the third died from neonatal hepatitis, and they concluded that in such cases one must either postulate that the viraemia in the mother is intermittent or, alternatively, that other factors, such as the healthiness of the placenta, play a large part.

In view of the recent interest in the role of hepatotoxic agents in the incidence of liver disease in the tropics and sub-tropics the occurrence of 3 such cases in 1 year at Baragwanath non-European Hospital is worthy of note.

CASE RECORDS

Case 1

A male African child, J.N., aged 2 months, was admitted on 8 February 1955 with a history from the mother of jaundice and breathlessness since birth. The urine had been dark red and the stools yellow. The infant was moderately well-nourished and markedly jaundiced. There was an enlarged liver and spleen, but the rest of the clinical findings were essentially negative. Laboratory investigations included a haemoglobin of 8·8 g.% (white blood-cells, 20,900 per c. mm.—43% neutrophils, 50% lymphocytes) with a normochromic anaemia, alkaline phosphatase 38·4 units (King Armstrong), serum bilirubin 9·2 mg. per 100 c.c. with a direct positive v. d. Bergh reaction. Other liver function tests were non-contributary. The Eagle test was negative and X-rays of the tibiae failed to reveal any evidence of syphilis. The direct Coombs test was negative and bilirubin (++) was present in the urine. *Laparotomy* revealed the presence of a large dilated gall-bladder. The biliary tree was patent throughout its length and showed no evidence of obstruction. The liver was congested and bled profusely after biopsy. Microscopic examination of the liver biopsy showed numerous multinucleated giant liver-cells, some with 'ballooning' degeneration. The portal triads were oedematous and diffusely infiltrated by eosinophils, polymorphs, lymphocytes and macrophages, but bile-duct hyperplasia was not a feature. Foci suggestive of myelopoiesis were also observed. There was marked bile-pigmentation of the parenchymal cells and Kupffer cells, but the bile-ducts did not contain bile. A noticeable feature of the biopsy was the absence of necrosis and degeneration. The diagnosis was made of a neonatal hepatitis (Figs. 1 and 2).

The child was discharged on 27 April 1955 with the jaundice somewhat improved.

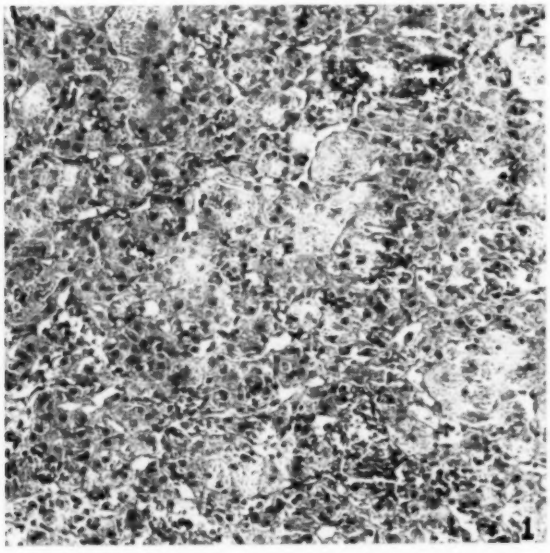

Fig. 1. Case 1. Section of the liver showing swelling of the liver cells with marked granularity of the cytoplasm. Some of the cells contain multiple nuclei and there is a marked cellular infiltration. Haematoxylin and eosin × 150.

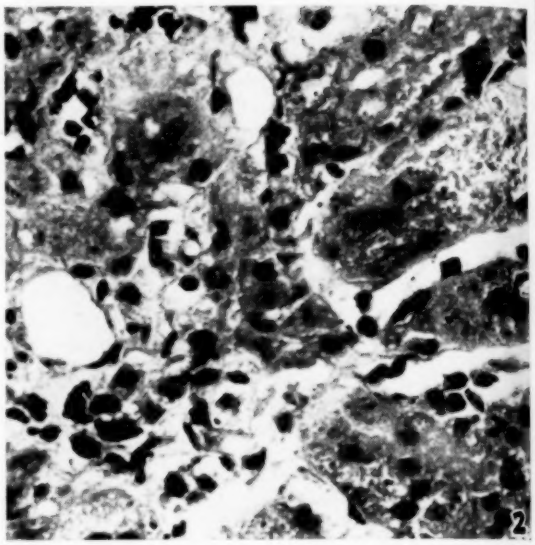

Fig. 2. Same as Fig. 1, showing the multinucleated liver cells and a heavy infiltration of the interstitial tissue by chronic inflammatory cells. Haematoxylin and eosin × 600.

Case 2

A female African infant, D.M., aged 20 days, was admitted on 15 August 1955 with a history of bleeding from the nose, swelling of both lower limbs and yellow urine for 4 days. There was one sibling which was healthy and well. The infant was poorly nourished and jaundiced and showed pin-point haemorrhagic spots on the tongue and palate. There was slight enlargement of liver and spleen but no other significant findings apart from some oedema of the legs. Laboratory investigations showed a serum bilirubin of 12·2 mg. per 100 c.c. with a direct positive v. d. Bergh reaction; bilirubin (+++) and urobilin (+) in the urine. X-ray studies of the lower limbs failed to reveal evidence of syphilis. A Wassermann reaction performed on the mother was positive. The infant lost weight progressively and eventually died 12 days after admission.

At autopsy the liver was smooth and of normal size, with a dark green surface. The biliary passages were patent. The other findings were non-contributory. Section of the liver showed diffuse necrosis of hepatic cells. The remaining cells were markedly enlarged, with swollen nuclei. Many cells were multinucleated, containing up to 12 nuclei each. There was diffuse bile-pigment deposition in the hepatic cells and many of the bile canaliculi contained thrombi of inspissated bile. The parenchyma and portal tracts showed moderate diffuse infiltration by lymphocytes and plasma cells. *Treponema pallidum* was not observed. The histological features suggested a neonatal hepatitis.

Case 3

A male African infant, B.J., aged 1 month, was admitted on 22 September 1955 with a history of vomiting of blood, passing of black tarry stools, and jaundice for 1 day. The mother gave a history of having had 2 previous babies, of which one died at the age of 3 days and the other was stillborn. The patient was an acutely ill, gasping infant, showing marked jaundice. He died

soon after admission before any laboratory investigations could be performed.

Autopsy. A jaundiced, poorly nourished infant with numerous areas of subcutaneous haemorrhage. The liver was smooth and not enlarged but presented a dark-green discolouration. The biliary tree was patent. In addition there was a large subarachnoid haemorrhage. On section the liver showed marked swelling of the liver cells, with prominent bile-staining. Bile thrombi were observed in the liver cells and bile canaliculi. The bile-ducts in the portal tracts were not distended, but occasional foci of bile-duct proliferation were noted. There were numerous areas of infiltration by lymphocytes, plasma cells and polymorphs. Many areas of necrosis of liver cells were present. The most significant feature was the presence of numerous multinucleated liver-cells containing up to 20 nuclei each. Many of these cells contained bile pigment and in some instances showed evidence of degeneration of both nuclei and cytoplasm. There was no increase in the stainable iron and prolonged search for *Treponema pallidum* yielded negative results. The diagnosis of neonatal hepatitis was made (Figs. 3 and 4).

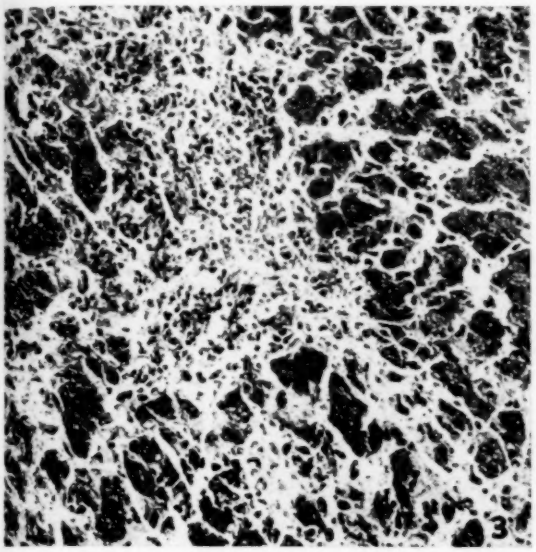

Fig. 3. Case 3. Showing the swelling of the liver cells with foci of necrosis and infiltration by lymphocytes, plasma cells and polymorphonuclear leucocytes. Haematoxylin and eosin × 150.

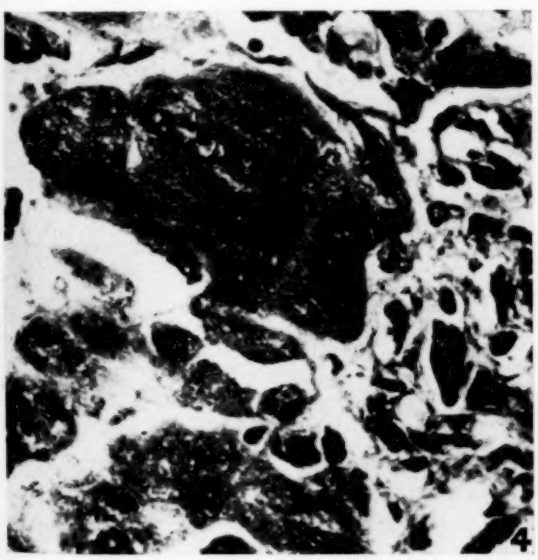

Fig. 4. Same as Fig. 3 showing clearly a multinucleated liver cell. The surrounding cells show areas of necrosis. Haematoxylin and eosin × 600.

COMMENT

The clinical and pathological features of these 3 cases resemble closely those described in the literature. A bleeding tendency was noted in 2 of the cases reported by Craig and Landing[1] and was a prominent feature of 2 of the above cases. The maturity of the liver lesions taken in conjunction with the short period of survival seems to indicate that the disease developed *in utero*. In one instance (case 2) the mother's Wassermann reaction was positive, but the infant exhibited none of the usual stigmata of syphilis. Although cases of cirrhosis of the liver are rare in adolescence, it is conceivable that some of them may follow neonatal hepatitis. As there are investigators who hold that the aetiology is some obscure blood-group incompatibility it is unfortunate that blood-group studies were not carried out on the parents. A further disadvantage was the failure to elicit from the mothers a complete clinical history concerning previous jaundice or transfusions. Nor was it possible to perform liver biopsies on the mothers. It is clear therefore that neonatal hepatitis must enter into the differential diagnosis of icterus in the newborn, and that in all such cases where the diagnosis is suspected a liver biopsy should be performed.

SUMMARY

The literature on neonatal hepatitis is reviewed and 3 African cases from Baragwanath Hospital reported.

Thanks are due to Dr. J. D. Allen, Superintendent of Baragwanath Hospital, for permission to publish these cases, Dr. E. Kahn for the clinical records, and the photographic department of the South African Institute for Medical Research for the photomicrographs.

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XERODERMA PIGMENTOSUM

REPORT OF A CASE IN A BANTU CHILD

I. TARGOWSKY, M.D.

and

L. J. A. LOEWENTHAL, M.D., M.R.C.P., D.T.M.&H.

Johannesburg General Hospital, Johannesburg

Xeroderma pigmentosum is described by Andrews (1954) as a 'rare pigmentary and atrophic disease that begins in childhood and progresses to the early development of senile changes in the skin, which consist of ephelides, telangiectases, keratoses, papillomatous growths and carcinoma'. Ormsby and Montgomery (1943) say that although it is a rare disease 'a large number of cases have been recorded in different countries'. And indeed it is not difficult to find references to the condition in all parts of the world.

GEOGRAPHICAL DISTRIBUTION

There are innumerable references to cases found in various European countries and in North America. Elsewhere, a thorough search through the *Quarterly Cumulative Index Medicus* reveals the following reports of cases occurring in various countries: Galvão Peixoto (1941) describes cases encountered in Brazil; Stonham and Nagpaul (1941) in India; Mitsuda (1940) in Japan; Renard *et al.* (1945) and Junés (1930) in Tunisian children; Sivasubramaniam and Hoole (1952) in Ceylon; Hazelbrook and Muller (1937) in Java; Roffo (1937) in Bolivia; Blanc *et al.* (1934) in Morocco; Canright (1934) in China; Vignale and Malet (1932) in Uruguay; and Ceard (1931) in the Sahara.

But however widespread, if infrequent, the disease may otherwise be, all authorities agree that it is rare among Africans. Ormsby and Montgomery (1943) remarked with evident surprise that it had 'recently been reported among negroes'.

They were referring to the 3 cases described by Loewenthal and Trowell (1938)—see below—and added that the negro race 'had been presumed to be immune to this disease'.

Case Reports in the African

On examining the literature as far back as 1930, we find that only 5 cases of xeroderma pigmentosum have been reported in Africans. The first of these were 3 brothers described by Loewenthal and Trowell (1938). King and Hamilton (1940) published a report of a negress 17 years old who suffered from the disease, and a child with the same affliction was discovered by Dr. Max Rose at Baragwanath Hospital, Johannesburg, and reported by Cohen *et al.* (1952).*

The following case may therefore be of interest as adding an eighth to the series of cases of xeroderma pigmentosum which have been seen in the African.

* One of us has seen another case (not reported) in a Bantu child in Johannesburg, and Dr. G. H. Findlay of Pretoria tells us of one whom he saw there.

CASE REPORT

A male child, aged 6 and belonging to the Sotho tribe, was admitted to Baragwanath Hospital on 18 March 1956, having been referred by a mission hospital in the Eastern Transvaal. His complaint was soreness of the eyes and mouth. No clear history of family background, or even the number of siblings, was obtainable.

Clinical Findings

On examination the child appeared small for his age, but otherwise fully developed and in a good state of nutrition; he had a number of scaly plaques on his scalp, most of them located over the vertex and laterally to it on both sides. Several of the plaques showed small areas of ulceration. Intense photophobia was present and there was redness and injection of the conjunctivae. The mucous membrane of the tongue and lips was ulcerated. Several ivory-white, indurated areas of leukoplakia, about 1×0·5 cm., were present on the oral mucous membrane near the angles of the mouth. On the tip of the tongue was a small, heaped-up growth, ulcerating in the centre (Fig. 1). A papule 2 mm. in diameter was situated on the face, at the lateral end of the right zygomatic arch, and a similar, but smaller and shallower one was present lateral to the outer canthus of the left eye, and half an inch below it. There was a third small papule on the mid-line of

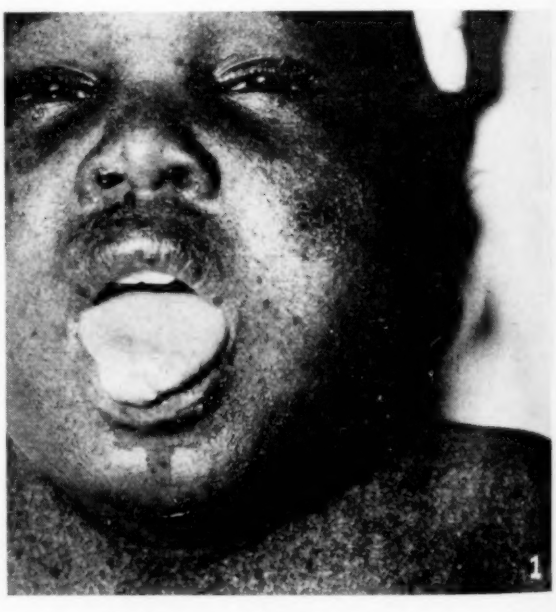

Fig. 1. Showing tumour of tongue and appearance of skin.

Fig. 2. Appearance of skin. Note white patches at angles of mouth, photophobia and lachrymation.

the nose, half way down from the bridge. *The Skin* over the whole body showed small interlacing macules of hyper- and hypopigmentation, which produced a 'salt and pepper' effect (Figs. 1 and 2). On the arms and forearms this was more marked over the flexor surfaces, although not confined to them. The hands, palms and soles were free of pigmentation, but the dorsal surface of the feet displayed the effect.

For the rest, the cardio-vascular, pulmonary, abdominal and central nervous systems showed no abnormality. The peripheral pulses were present and equal and the gait was normal. The child was not very communicative and the affective side of his psyche seemed depressed, but he was capable of understanding normally for his age.

A radiograph of the chest showed an old calcified lesion in the left mid-zone and doubtful glands in the hilum.

The ophthalmologist's report read as follows: 'A superficial pannus is present in the cornea of the right and left eyes and there is a white mass on the conjunctiva of the right eye and the cornea of the left eye. There is infiltration and vascularization of the inner aspect of both corneae, together with some conjunctival injection. There is no staining with fluorescin (thus no ulceration)'.

The opinion was expressed that the eye condition might be a nutritional keratosis. One month later the eye was pronounced much improved on treatment, but there was still a white mass on the medial part of the left cornea.

Diagnosis

This does not cause difficulty to anyone who has seen a case before. Ormsby and Montgomery (1943) affirm that the disease is such a characteristic disorder that 'an error in diagnosis is hardly possible'.

Histology

Biopsies were taken of the scalp, tongue and arms and the region of the upper lip. The specimens were embedded in paraffin and stained with haematoxylin and eosin (Weigert and Masson).

1. *Tongue*. This section showed infiltration by a Grade I-II squamous carcinoma.

2. *Scalp*. The section showed a ringworm infection of the hairs and stratum corneum, in addition to the features regarded as typical of zeroderma pigmentosum which are seen also in the other specimens of the skin.

Moderate hyperkeratosis is present. There are alternating areas of parakeratosis and acanthosis and of atrophy of the epidermis. The pigment changes are characteristic, consisting of alternating hyperpigmentation and depigmentation of the epidermis. In the former areas the pigment almost obscures the deeper rows of epidermal cells and even reaches the stratum corneum in coarse clumps (Fig. 3). These areas of pigmentary change do not correspond with the areas of alternating acanthosis and atrophy.

The corium is more cellular than normal, the increase being chiefly of lymphocytes and fibroblasts. Chromatophores are seen in large numbers, particularly immediately below the areas of epidermal hyperpigmentation. The majority are situated in the upper third, as in all varieties of incontinence of pigment, but a few are seen also in the middle third of the cutis.

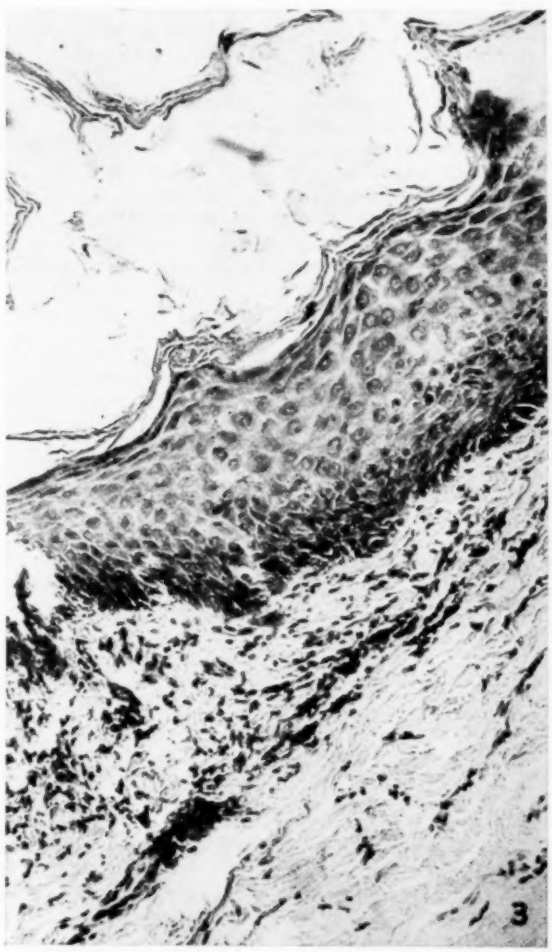

Fig. 3. Note hyperpigmentation in epidermis, clump of pigment in stratum corneum, and band of chromatophores in upper corium. The lacuna on the left margin is an artifact. ×190.

Appropriately stained sections showed no gross alteration of the collagen or elastic tissue.

DISCUSSION

The naked-eye and histological appearances of the skin, along with the changes in the eyes and tongue, are diagnostic of xeroderma pigmentosum. The case which King and Hamilton reported (1940) was of a much older patient, a negress aged 17 years, and they admit that the publication of Loewenthal and Trowell's paper was a substantial factor in arriving at their conclusion, by providing proof that xeroderma pigmentosum was in fact to be found in negroes; nevertheless in King and Hamilton's case the description was characteristic and the histological findings confirmed the diagnosis. Rose's case was of a Bantu child that showed patchy depigmentation over the whole body, with numerous patches of squamous carcinoma on the face and scalp and infiltrated cervical glands. There can be no doubt that the diagnosis of xeroderma pigmentosum has been established in all the 5 cases which have previously been reported in Africans.

The belief that negroes would prove immune, because of their enhanced protection from light, has been abandoned for nearly 20 years. The presence of lesions on the tongue of this case, as well as in 2 of those described by Loewenthal and Trowell, is an additional reason for believing that xeroderma pigmentosum is an inborn abnormality, which includes hypersensitivity of the skin and eyes to light as only one of its manifestations.

Treatment. No effective treatment of a specific nature has yet been discovered. There remains excision of the malignant tumours and their treatment by radium or X-ray. Some years ago Smithers and Wood (1952) advanced claims for a cream based on titanium dioxide, which they had used with moderate success in a case of xeroderma pigmentosum in a European girl as a protective application against sunlight. This cream, which has been elaborated further and made cosmetically attractive by the Elizabeth Arden Company, could usefully be tried for its prophylactic value, to prevent or delay the development of areas of squamous carcinoma. Gianotti (1953) has recently claimed partial success in a single case both with vitamin A and later with testosterone propionate and equine gonadotrophins. Guzman (1952) treated 2 cases with cortisone and reported improvement during the time of administration.

SUMMARY

A case of xeroderma pigmentosum in a male Bantu child is described.

Our thanks are due to Dr. G. D. Elliott, Deputy-Superintendent of Baragwanath Hospital, for permission to publish this case, to Dr. S. Wayburne and Dr. E. Kahn of the paediatric ward for referring the case to us and providing the photographs, and to Dr. I. M. Orska, for the investigations and the general interest she took in the case. Mr. Ulrich, of the South African Institute for Medical Research, prepared the photomicrograph.

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RECENT WORK ON THE HISTOCHEMISTRY OF THE ADRENAL MEDULLA AND ITS BEARING ON THE TREATMENT OF ESSENTIAL HYPERTENSION*

PERICLES MENOF, M.B., B.CH. (RAND), M.R.C.P.E.
Senior Physician, Johannesburg Hospital

In the section dealing with the adrenal medullae, in Professor Clark's well-known text-book on Applied Pharmacology[1] reprinted in 1942, appears this interesting and rather curious sentence: 'The functions of these glands are exceptionally simple, since they only produce a single active principle, namely, adrenaline or dihydroxy-phenyl-ethanol-methylamine.'

Though we might be justified in raising our eyebrows at the dogmatism of this statement and more particularly at the words 'exceptionally simple', we must admit that Professor Clark was expressing, in essence, the views we all held about the adrenal medulla in 1942. For here was an endocrine gland which on section presented a homogeneous appearance and which on microscopical examination appeared to be made up of cells of one type. These cells stained uniformly with potassium bichromate. They secreted adrenaline, which had not only been

* A paper read at a meeting of the Southern Transvaal Subgroup of the Association of Physicians of South Africa, Johannesburg, 5 July 1955.

extracted from the gland but had also been synthesized. On injection this hormone produced effects closely resembling those produced by stimulation of the sympathetic nervous system.

The first indications that all was not well with the unitarian doctrine of adrenomedullary function appeared within 4 short years of this confident pronouncement. Between 1946 and 1948 von Euler drew attention to the presence in spleen extracts,[2] in post-ganglionic nerve-fibres,[3] and in the heart,[4] of a sympathomimetic substance which differed from adrenaline in its effects. A little later, thanks to the work of chemists who, at about this time succeeded in resolving noradrenaline into its laevo- and dextro-isomers, this substance was identified as l-noradrenaline and von Euler soon showed that this was no distant relation but the missing head of the family—'the dominating adrenergic neuro-hormone'.

Noradrenaline has an interesting history. It had been synthesised by Stolz in 1904, and as far back as 1906 Biberfelt had suggested its therapeutic use as a pressor agent. The discovery of its role in the body had been anticipated by Dale, who suggested in 1910 that it was a more likely candidate than adrenaline for the part of sympathetic mediator, because its action corresponded more closely with the effects of sympathetic nerve stimulation. Cannon, too, had been unable to equate adrenaline effects with those of stimulation of the sympathetic nervous system and, in order to account for the discrepancies between the two, had been forced to postulate the existence of two mediators, sympathin I and sympathin E, which he suggested were formed as a result of the interaction of adrenaline with certain cell-constituents. In 1937 Bacq suggested that sympathin E might be noradrenaline.

Shortly after noradrenaline had been identified as the chief sympathetic nerve transmitter, Holtz and his associates[5] showed that it was a constant constituent of the adrenal medulla. This naturally led to a closer histological scrutiny of the gland and within a few years Eränkö[6] by means of various staining techniques was able to demonstrate the presence of two kinds of tissue within it. Firstly, by staining for acid phosphatase, he demonstrated phosphatase-positive and phosphatase-negative tissue; secondly, merely by fixing in formalin and then examining under ultra-violet light, he showed the presence of brilliantly fluorescing cell-groups against a dark background of non-fluorescing cells and, finally, found that immersion in ammoniacal silver-nitrate for short periods caused a darkening of the same group of cells as fluoresced brightly after formalin fixation. He was also able to establish good correlation between the percentage of fluorescing tissue and the noradrenaline content of the adrenal medulla in different species of animals,[7] thus:

Animal	*Noradrenaline Content % of both Catechols*	*Fluorescent Tissue % of whole Medulla*
Cat	35—60	About 50
Dog	20—40	About 40
Hamster	25—40	About 30
Mouse	15—35	About 25
Rat	10—20	About 15
Guinea-pig	5	+
Rabbit	3	? 0

These findings strongly suggested that the fluorescent cells, the cells which stained darkly with ammoniacal silver-nitrate and the phosphatase-negative cells were noradrenaline producing, while the non-fluorescing, the silver-nitrate-negative and the phosphatase-positive cells were adrenaline producing.

In 1954 Hillarp and Hökfelt[8] described yet another way of differentiating between the two kinds of cells. They based their technique on the fact that potassium iodate and noradrenaline reacted *in vitro* to form a special pigment. This did not happen with adrenaline. Using the potassium iodate stain they were able to demonstrate selective staining of certain parts of the adrenal medulla. Later,[9] by an ingenious experiment based on the well-known antagonism between adrenaline and insulin, they were able to show that the *potassium-iodate* staining areas corresponded with those which took the *potassium-bichromate* stain after the adrenaline had been depleted by insulin shock. Simultaneous estimation of the catechol amines of the medulla showed a 50% depletion of adrenaline, the noradrenaline content remaining unchanged.

A little earlier Eränkö, in a similar experiment, had also demonstrated a depletion of adrenaline after insulin shock and it is interesting to note that he, too, estimated the loss at 50%. He, however, went a stage further and attempted to bring about a selective depletion of noradrenaline. And this he was able to do by using thyroid.[6]

His findings are so interesting in the light of the results of the thyroid treatment of essential hypertension, first reported in this *Journal*,[10, 11] that I propose to quote the relevant passages from his paper verbatim:

Effect of Thyroid Powder

'Adult male Wistar rats . . . were given 650 mg. of thyroid powder or ·40 mg. of organic iodine per kg. of body-weight. This dose was maintained for 8 days. The total dose corresponded to about 1 mg. of organic iodine per animal. The animals were killed by decapitation about 24 hours after the last meal containing thyroid powder, in a fasting state.

'The left adrenals were histochemically, the right ones chemically examined.

'Adrenaline contents in the adrenals of experimental and control rats were essentially similar. Thyroid treatment induced a loss in the noradrenaline content. . . . This loss amounted to nearly one-third of the original content.

'The percentage and the absolute volume of the silver-positive medullary tissue (that is, noradrenaline-containing tissue) . . . was reduced highly significantly to about one-half of the normal value.'

The experiment was repeated with the use of thyroid extract by injection ('Thyranon' of Organon Incorporated). I pass over the details of this experiment and quote only the results:

'Changes in the catechol content were essentially similar to those in the preceding experiment. No change in the adrenaline content was observed, while the amount of noradrenaline decreased by about 25%. The percentages of silver-positive and phosphatase-negative tissues both diminished, as they did in the thyroid feeding experiment.'

If thyroid secretion depresses noradrenaline production what would one expect if thyroid secretion was diminished or absent? I suggest hypertrophy of the noradrenaline-producing cells and an increased production of noradrenaline. In order to clinch the argument for the antagonism of the thyroid and the noradrenaline-producing part of the adrenal medulla it would be

necessary to show that thyroid depression was followed by these changes.

Although an experiment will have to be undertaken to show this, there is already evidence to hand to indicate that we shall find what we are seeking.

In 1945 Marine and Baumann[12] by depressing the thyroid function of 7 rats with thio-uracil were able to produce hypertrophy of the adrenal medulla. In one of the animals the hypertrophy was so marked that it resembled a phaeochromocytoma. In this finding there is a hint of the nature of the hypertrophied cells, because most phaeochromocytomas are noradrenaline producing. I conclude the evidence I am submitting with a summary of their findings. If we bear in mind that this experiment antedated the discovery of noradrenaline in the medulla and that adrenaline estimations at the time included noradrenaline, then we should find their results highly suggestive. This is their summary:

'Data are presented from a series of 7 experiments comprising male and female adult rats which received from 40 to 120 mg. of thio-uracil daily in their food from 14 to 385 days. These rats show an irregularly progressive increase in the size of the adrenal medulla. The hypertrophic medullae took a more intense chrome stain than normal adrenals and the epinephrine store as measured by the Folin-Cannon method was significantly greater than normal. It is suggested that the thyroid-adrenal medulla interrelation is a direct one.'

COMMENTS AND CONCLUSIONS

It is now definitely established that the adrenal medulla secretes not only adrenaline but also noradrenaline. These two hormones are produced by different kinds of cells and often in response to different kinds of stimuli. According to von Euler,[13] 'when general blood-pressure homeostatic reflexes are elicited . . . . the adrenal medullary secretion chiefly consists of noradrenaline.' On the other hand, 'insulin hypoglycaemia causes a great increase in adrenaline, leaving the noradrenaline secretion almost unaltered.' Thus, there would appear to be a selective secretion of these hormones. This implies separate innervation for the two types of cells, and it is interesting to note that Folkow and von Euler[14] found that stimulation of one part of the hypothalamus produces an adrenomedullary secretion which consists predominantly of adrenaline, while stimulation of another part produces a secretion predominantly of noradrenaline.

One of the most important functions of adrenaline is the elevation of the blood-sugar level. This action is opposed by insulin, which lowers it. Thus, in so far as blood-sugar regulation is concerned, these hormones have antagonistic actions. It is therefore not surprising to find that excessive amounts of insulin bring about a selective depletion in the adrenaline content of the adrenal medulla, as shown by the work of Eränkö and of Hillarp and Hökfelt quoted above.

By far the most important function of noradrenaline is the elevation of the diastolic blood-pressure. This action is opposed by thyroid secretion. The evidence in support of this statement has been elaborated in a number of recent papers[15, 16] and will not be detailed here. In essence it consists of two facts: first, that thyroid overactivity is associated with a fall in the diastolic pressure and, second, that thyroid enlargement and overactivity can be provoked by noradrenaline excess. As far as regulation of the blood-pressure level is concerned, then, these two secretions are antagonistic. In keeping with this conclusion is the fact that thyroid excess brings about a selective depletion of the noradrenaline content of the adrenal medulla as shown by the experiments of Eränkö mentioned above.

Thus, just as we have an antagonism between adrenaline and insulin in blood-sugar regulation, so also we have an antagonism between noradrenaline and thyroid secretion in the regulation of the blood pressure.

It should be clear from the evidence quoted above that a close parallel exists between the methods whereby the body controls and regulates the blood-sugar and the blood-pressure levels. This parallelism becomes more obvious still when we recall Cannon's work on the effect of the emotions on adrenomedullary function, for it was he who taught us that under emotional stress the adrenal medulla immediately pours out its secretions with the object of preparing the body for the emergency—for the 'fight or flight' which is to ensue. He showed us that two of the results of this overactivity were the elevation of the blood-sugar and of the blood-pressure levels and he had no difficulty in convincing us of the importance of these adjustments in the battle for survival.

Once the crisis is over, however, the persistence of these emergency regulations would serve no useful purpose and might, indeed, prove harmful. It is essential, therefore, that mechanisms should exist for rapidly restoring the internal *milieu* to normal. In the case of the elevated blood-sugar level this is achieved by overaction of the islets of Langerhans and the increased production of insulin; in that of the elevated blood-pressure by overactivity of the thyroid gland and an increased production of *its* secretion. The clue to the homeostatic function of these glands, then, is to be found in the urgent need for the restoration of blood sugar and blood pressure to normal levels. Failure of these restorative mechanisms brings about the disorders we recognize clinically as diabetes mellitus and essential hypertension respectively.

The views here propounded give us a clear understanding of the physiological disturbances responsible for these two conditions. They also tell us that in treating diabetes mellitus with insulin, we are following Nature's own way of correcting the disturbance in equilibrium. This being so, it should be obvious that in treating essential hypertension with thyroid we are following precisely the same path.

We may conclude, then, that recent work on the histo-chemistry of the adrenal medulla, not only confirms the views on the aetiology of essential hypertension previously elaborated,[15, 16] but that it also places the treatment of this disorder on a sound physiological basis.

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ASTHMA IN YOUNG BOYS

MORRIS HELMAN, M.B., CH.B. (CAPE TOWN)

Green Point, Cape

Asthma in adolescents would appear to occur to a greater extent in boys than in girls; and in the treatment of it the psychological factors as well as the physical would seem basic to a cure of the ailment. These are the conclusions which I would draw from having, during the last 18 years, to treat many patients suffering from asthma, and particularly, during the last 10 years, patients of the age-group 8-18 years.

One has been struck by the fact that the clinical picture of asthma in the grown-up differs from that in the child and, further, that the picture in the age-group 8-18 years is different from that in children below 8 and persons above 18.

Numbers of articles have been written by paediatricians about asthma and the behaviour of children from birth to the age of about 8 years; one also sees, in medical text-books, chapters on asthma in adults; but no one specifically mentions what happens in those middle years between childhood and adolescence.

I have on record at least 6 boys who came to me between the ages of 6 years and 12 years and I have followed them up to their present ages of 16-18 years.

Why should these young asthma patients, seen over a period of 8-10 years in a part-contract practice, where one sees about 40-50 patients a day, all have been boys, and why were hardly any girls seen who had asthmatic attacks of a lasting nature. I doubt whether this is pure coincidence, and I feel that asthma is not prevalent in young girls at that age-period, as it is in boys. This is borne out in the literature, where it is stated that the ratio of boys to girls who suffer from asthma is 3 to 1.

There are at least 3 groups of asthmatic patients, namely (*a*) the infective type, such as the bronchitic, (*b*) the allergic type, and (*c*) the nervous type. Treatment of the ailment in the age-group between 8 and 18 years (or, as I prefer to call it, the intermediate age-group) is basically the same, no matter to which of these 3 types the patient belongs. Infection, however, has to be treated, the same as always, with antibiotic drugs, allergy with anti-histaminics, and nervous attacks with sedation.

But treating the patient symptomatically is not sufficient, and does not get at the cause. Too often, unfortunately, despite taking a careful history and finding out whether the ailment is hereditary, doing skin tests to determine the allergic factor, finding the causal organism in each attack of bronchitis, or administering sedatives, the condition remains the same—uncured.

A definite regime must be instituted and *maintained* if one is to meet with success in the treatment of asthma in the young. I have reached this conclusion partly from my reading of the relevant literature, and partly from what I have gathered from my young patients.

SEDATION

The vast majority of cases of asthma or bronchospasm in children have a psychological basis. In view of this factor it is of the utmost importance to gain the child's confidence and, moreover, that he should develop confidence in himself without outside help. The child will, however, only gain confidence in himself if he has confidence in his doctor, and this in turn will only be obtained if the doctor can find a method of relieving his symptoms. I found that one of the best ways of winning the confidence of the child was to give him something that would let him sleep through the night. Most of these attacks come on at night, for it is then that the patient is at rest and has time to think of what has happened throughout the day and what may happen the next day. The fear or apprehension of these happenings wake him at night and he gets his attack. Therefore if he can sleep through the night, he realizes that the doctor really can do something for him, and trust will have been established.

It has been my practice to prescribe for these young patients at night a preparation in capsule form of 1/8th gr. of ephedrine plus 25 mg. of Histadryl, and they are told that this capsule will keep them free for the night. In addition I also impress upon them that they have to maintain this treatment for 2 years. The fact of taking the capsule for 2 years, I find, impresses one's young patient immensely, for he now for the first time feels that here is something that is not just for the odd occasion, and that if he carries on with it he will be free of his attacks. This part of the cure thus assists him psychologically. The capsule, as can be seen from its contents, has a definite antispasmodic effect; it is particularly useful between acute attacks, but is too mild in an acute attack.

The use of these capsules is to my mind important, for the longer the child is free from an attack, even an insignificent attack, the sooner he is likely to forget his disability. This, I believe, is one of the main factors in restoring confidence in the patient.

Another factor—but allied to the first one in helping the child to forget his disability—is that there should

be no mention of the child's ailments (or indeed of illnesses at all) by parents in the child's presence; still less should there be any talk at home about an allergy or its symptoms, if the type of asthma from which the child is suffering is allergic in character. Children generally, and these children in particular, are very impressionable, and they may easily become the victims of a lot of 'dos' and 'donts'—no fish, no eggs, no pets, no feathers, no walks in the field. Such a strict regime, bringing the child's ailments constantly to his attention, and the giving of innumerable patent medicines, will usually prove of no avail; the cure will often be worse than the disease. I sometimes wonder whether these patients don't develop a fourth form of asthma, namely 'drug asthma'.

I particularly ask parents to avoid using the term 'asthma'. It spells danger to the child, and it is better to use the term 'bronchospasm', which does not convey such a sinster meaning to patients and parents.

EXERCISE

Another factor in my treatment was obtained from one of my young patients. He said to me one day, 'You know, Doctor, after I have been swimming I sleep better at night'. Up to that time I had been somewhat afraid of letting my asthma patients go swimming. Parents too, seem to prefer to keep these children out of the water for fear that they may catch cold and an attack may be precipitated. After that I made this patient come and see me before he had a swim and I found his chest to be wheezing; yet after his swim I found that the wheeze was infinitely better and that his breathing was better. Was this because of the exercise he had had and the consequent better aeration of his lungs? The booklet on asthma research issued by the Department of Child Health at Guy's Hospital, London, describes breathing exercises designed to promote greater and easier expiration as well as muscle relaxation, and to prevent and alleviate emphysema and deformities such as the characteristic square shoulders, high horizontal clavicles, transverse sulcus and prominent sternum. The better aeration of the lungs, therefore, I felt must have been the reason why my young patient felt better after his swim.

These breathing exercises, however, are not enough. Equally important are postural exercises, for several reasons. In the first place the better physical development of these lads is beneficial in enabling them to breathe properly and in respect of their general well-being. Secondly, a better physique is of assistance phychologically. These asthma patients are often lads who have to suffer the scorn and teasing of their fellow scholars because they are unable to keep up with them during physical training, drill or games, and have to fall out. Often, too, they cannot take part on equal terms in sport or hold their own in the rough-and-tumble in which boys sometimes engage. The result is that they develop a feeling of inferiority which they associate with their complaint. If any episode in which they have had to give best to their colleagues has taken place during the day, it is often the forerunner of an attack, particularly at night, when the boy has had time to brood about it before going to sleep.

I therefore strongly advise the parents of these boys to take them to a physical culturist where they will get the correct type of training and where, under supervision, they are induced to do their training regularly.

Parents must make sacrifices of their time in this respect and make it their business to accompany their children to the physical-culture classes, or to see to it that the boys get there. Once the boy finds his physique improving, and that he can better compete with his schoolmates and hold his own at sport or in a rough-and-tumble, one can notice an obvious change. The boy becomes brighter and more alert, carries himself better, appears confident, and the attacks of bronchospasm are generally much diminished.

I have often been asked whether *climatic conditions* have any effect on these patients, and whether the fact that some of them live close to the sea is an aggravating circumstance. My observations seem to show that climatic conditions do not play any part, and many of these patients I have treated successfully have lived right by the sea. I have been asked whether the cold sea-bathing affects them. As I have mentioned above, swimming is beneficial.

Mention is made below of a few of my cases. The clinical picture need not be set out in each case in detail; suffice it to say that each came to me with an attack of asthma or bronchospasm—in some cases with pyrexia, in others with bronchitis; usually with a cough which was slight at first, viscid sputum, chest fixed in inspiration, numerous rales and rhonchi, and restricted intake of air.

CASE RECORDS

Case 1. Master J.R., age 10 years, was a case of infective asthma developing temperature, bronchitis and bronchospasm at least 3-4 times a year. His father was very ill with disseminated sclerosis and as the father's condition grew progressively worse, especially the slurred speech, the boy became very upset. It obviously occupied his thinking a great deal, for he often mentioned it to me. He was treated at the beginning with penicillin, antispasmodic cough-mixtures, and at time adrenaline by injection; but after a bad attack I decided to put him on a capsule of ephedrine and histadryl every night for 2 years, and sent him to do physical culture for a further year. I encouraged him to take part in sport and, in spite of a very wet winter that year, his attacks of bronchitis and bronchospasm greatly diminished in number and in intensity. After 18 months he was awarded a cup at school for being the most improved rugby player in the under-12 section. He is now at High School, aged 15, and has had only one attack of bronchitis in the last 2 years, and no bronchospasm.

Case 2. Master S.M., aged 12 years, was also a case of infective asthma. He was similarly put on Histadryl and ephedrine as well as exercises, and improved almost immediately. He is 17 years of age now and has developed physically so well that he is doing amateur wrestling. During the last 2 years I have attended him only once for an attack of bronchitis and bronchospasm, and that was on an occasion when he went away from Cape Town on holiday. A doctor who saw him then mentioned that he had an attack of asthma and this seemed to have aggravated matters, for it was only when he returned home, still wheezing that his attack subsided, and it was only after I had reassured him that it was not asthma but bronchitis that he cleared up.

Case 3. Master J.C., aged 12 years, was a case of allergic asthma. By the time I saw him his parents had, in an attempt to alleviate his ailments, already moved to 6 different parts of the Cape Penin-

sula, but on each occasion they had been told that the area to which they had moved was not good for allergic asthma. I gave him the same treatment as the two previous cases and, although he had a few attacks in the interim, I kept on reassuring him and telling him that it was not asthma from which he was suffering, but bronchitis. He asked me if he could go swimming and I agreed that he could do so. During the past 2 years he has become a pearl diver and at the age of 16, except for a little allergic rhinitis, which he had cauterized a few months ago, he is completely well. I examined him recently and pronounced him fit to join the South African Naval Training Ship 'General Botha', where a high standard of physical fitness is required.

Case 4. Master J.W., aged 10 years, was a lad who came from England to South Africa and used to get both infective and allergic asthma. He was often away from school for weeks on end. He was seen by a physician and given vaccine injections against colds and other chest complaints, but to no avail. As in the other cases I have mentioned, I gave him the same capsules to take at night, and in the periods between attacks made him undergo a course of physical culture. He was very thin, and twice I had him X-rayed to exclude pulmonary tuberculosis, with negative results. He responded well to treatment with the capsules and physical culture, and after a year was fit enough to do ballet dancing.

Case 5. Master K. v. R., aged 12 years, was a case of allergic rather than infective asthma. He was an only child, with a mother of a rather nervous disposition. He was flat chested and distinctly suffered from a feeling of inferiority. I assured him that he would be quite all right, and prescribed ephedrine and Histadryl at night, as well as physical culture under supervision. The boy is now 17 years old, 6 feet tall, and physically very well developed; he has just left to join a special Air Force battalion.

Case 6. Master V. d. W., aged 6 years, similarly developed asthmatic attacks, some of which were accompanied with temperature. He often needed adrenaline as well as antibiotics. With a capsule of ephedrine and Histadryl at night, and physical exercises, he improved quickly and for the past year he has had no further attacks of bronchial spasm. An interesting factor in his case is that about a year ago he had an attack of whooping cough and it is since that time that he seems to have lost his attacks of bronchospasm.

CONCLUSION

While I must admit that not all cases of asthma are of this kind, yet the cases I have written about were consecutive cases, and this kind of case would seem to constitute the majority of asthma cases that one sees in the intermediate age-period (6-16 years).

I feel that many people who are called upon to deal with asthma patients in this intermediate stage of their lives, are inclined to overtreat them. As can be seen from my cases, this is not necessary. It is to be remembered, too, that reassurance of the young patient is vital. It is important that the doctor should try and make himself available to the young patient whenever required, for if he knows that the doctor will always come to his aid, it will greatly increase his confidence and that of his parents. An anxious parent may, by his or her behaviour, be the trigger mechanism which sets off the attack. The third point is, that it is important that not too much emphysema should develop before breathing exercises and postural exercises are instituted. Under these methods the children appear, literally, to grow out of their ailment of their own accord. If on the other hand the child be left to 'grow out of it' by himself, and only symptomatic treatment is given, then a most unhappy state of affairs may eventuate for both patient and parent, causing them endless anxiety and suffering. The *Duchess's* dictum would be most apt:

> 'Speak roughly to your little boy
> and beat him when he sneezes.
> He only does it to annoy
> Because he knows it teases.'

I wish to thank Prof. F. Forman and Dr. M. Horwitz for their criticism and kind guidance.

SOUTH AFRICAN MEDICAL AND DENTAL COUNCIL MEETING

MEDICAL, DENTAL AND PHARMACY AMENDMENT BILL, 1956

At the meeting of the South African Medical and Dental Council held at Johannesburg on 17-19 September 1956[1] the Executive Committee reported to the Council the action that had been taken as emergency measures to deal with the situation that arose when, in May 1956, the Committee became aware of the terms of the departmental draft of a Bill to amend the Medical, Dental and Pharmacy Act. Two clauses of the draft Bill that gave rise to grave anxiety were:

1. Clause one, which was designed to amend section 23 of the principal Act so as to extend to any person who is a South African citizen in terms of the South African Citizenship Act 1949 the right to be registered as a medical practitioner or dentist if he possesses a degree, etc. not prescribed under section 22 but which is prescribed under section 23; and
2. Clause ten, which was designed to amend section 73 of the principal Act so as to make it illegal for a practitioner (except in an emergency) 'to compound or dispense or supply medicine if he carries on his practise from a point less than 5 miles from a municipality, town or village wherein a chemist or druggist is conducting business as an open shop.'

REGISTRATION OF HOLDERS OF FOREIGN MEDICAL OR DENTAL QUALIFICATIONS

Section 23 of the Act (in its present form) confers certain rights on persons who were born in the Union of South Africa or who, not having been born in the Union, were domiciled in the Union when they commenced their medical studies and proceeded overseas for the purpose of prosecuting those studies. In short, these rights were conferred on *de facto* South Africans (i.e. by birth or domicile). The rights conferred were to enable these South Africans to become registered as doctors or dentists not under section 22, which is the normal or usual way of obtaining registration, but by qualifying at one of many medical schools (in Germany, America and various other foreign countries) which are recognized by the Council under section 23.

The effect of clause one of the draft Bill would have been to throw open this privilege, hitherto restricted to persons who were South Africans when they proceeded overseas to pursue such medical or dental studies, to any alien holding one of the qualifications recognized under section 23, who had settled in South Africa and obtained South African citizenship by naturalization or marriage, or should in future do so.

The Executive Committee were strongly of opinion that the effect of this proposed amendment would be to the disadvantage and detriment of South African citizens by birth or descent and against the interests of members of the medical and dental professions and of the public as a whole. Memoranda on the subject were submitted by the President (Prof. S. F. Oosthuizen), the Vice-president (Dr. R. V. Bird), and the Council's legal advisers (Messrs. Rooth and Wessels); and the Minister of Health on 22 May received a deputation consisting of the President, the Vice-president, Prof. van den Ende and Prof. F. D. du T. van Zyl.

Following these negotiations the advice of the Executive Committee was accepted by the Minister and clause one of the draft Bill was revised to read as follows:

'1. Section 23 of the Medical, Dental and Pharmacy Act . . . . is hereby amended—

(*a*) by the substitution for sub-section (1) of the following sub-section:

"(1) Any South African citizen who—

(*a*) is a South African citizen by birth or descent; or

(*b*) was domiciled in the Union when he commenced his professional studies and proceeded therefrom for the purpose of prosecuting those studies

may, if he has obtained a degree, diploma or certificate not prescribed under section 22, but which is prescribed under sub-section (3) of this section, be registered as a medical practitioner or dentist, as the case may be" and

(*b*) by the deletion of sub-section (2).'

THE DOCTOR'S RIGHT TO DISPENSE

At the same interview on 22 May 1956 the views of the Council on clause 10 of the departmental draft were also presented to the Minister, with the result that the clause was omitted from the Bill as introduced in Parliament; that is to say it was not put forward as a Government measure. The Minister stated, however, that if some member of the House should move an amendment on the lines of the omitted clause 10 the Minister would accept the amendment and leave the matter to a free vote of the House. In the event, as the Bill was not taken beyond the second reading, this issue did not arise.

The South African Pharmacy Board is still pressing for a section prohibiting doctors from dispensing for their own patients, and have issued a memorandum on the subject. The amending clause which is now put forward by the Board in place of draft clause 10, which was not introduced in the House, is as follows:

'Section 73 of the principal Act is hereby amended by the substitution for the proviso thereto of the following proviso:

"Provided that he shall not—

(*a*) keep an open shop or pharmacy, or

(*b*) compound or dispense or supply medicine for a patient being treated within a radius of 5 miles of any chemist and druggist conducting business in an open shop which has been established within that area for at least six months, or

(*c*) be precluded from immediately administering medicine directly to a patient anywhere.

Provided further . . . . (*here follows exemption for medical practitioners acting as employees of the State, etc.*)

The provisions of sub-paragraph (*b*) shall come into operation on the first day of January 1957".'

Resumé of Events

The Executive Committee submitted to the Council a resumé of events, as follows:

In 1953 the Council resolved 'that a medical practitioner should not place himself in economic competition with a chemist and druggist, but cannot agree to the encroachment on a medical practitioner's right to do his own dispensing, as is envisaged in the amendment to the Act suggested by the South African Pharmacy Board.'

The Pharmacy Board wrote to the Council in February 1956 suggesting a joint meeting on the subject of dispensing by doctors. The Council at its meeting in March 1956 did not find this practicable, but it was arranged that the Executive Committee should meet the Pharmacy Board. This meeting took place on 11 August, when 7 members of the Pharmacy Board, and its Registrar, were present. Discussion took place on both sides and, after the members of the Pharmacy Board had left, the Executive Committee resolved to submit to the Council the Pharmacy Board's memorandum (referred to above) and the suggested new amendment to section 73 (see above). It also resolved that means should be sought to meet the points put forward by the Pharmacy Board if it were possible to do so and to assist the Board where possible; and it appointed a sub-committee of 3 members to go into the matter and endeavour to put forward to the Council concrete suggestions, e.g. an ethical rule on the subject or a letter to be circulated to all doctors and dentists. The Executive Committee also recommended that the Council should define what it intended to convey by the words 'economic competition' in its resolution of 1953.

DEBATE

A full debate on the subject took place at the Council meeting on 18 September 1956 on the report of the Executive Committee. A grave view was taken of the position that would be created if the amendment of section 73 that was now proposed became law, and it was decided that it was advisable to meet the points put forward by the Pharmacy Board in their memorandum, which also contained a number of inaccuracies. For this purpose a committee was appointed to draw up a memorandum, consisting of Drs. Bird, Braun, Laubser and Wagner and Mr. Rood. It was agreed that abuses of the doctor's right to dispense might occur, and in accordance with the Executive Committee's suggestion it was resolved: 'That in the opinion of the Council the words "economic competition" in the resolution of 1953 refers to abuses of the privileges embodied in section 73 of the Act.' The opinion was expressed that the Council should deal with any cases of abuse that might be reported, and a discussion took place on the question whether a rule on the subject should be added to the Council's ethical rules, or whether a 'warning letter' should be circulated to all registered medical practitioners. It was decided not to proceed on these lines at present, and the following resolution was finally passed:

'That in the opinion of this Council section 73 of the Act embodies a traditional right of the medical profession which is entirely compatible with the best interests of the public, and that this section should therefore remain unaltered. Should evidence be placed before the Council that abuses are taking place under this section this Council is prepared to take the necessary steps to safeguard the position by way of ethical rules or disciplinary action.'

It was also decided to submit this resolution to the Minister together with the proposed memorandum, and that the Pharmacy Board be also informed of the resolution.

PERFORMANCE OF MEDICAL FUNCTIONS BY NURSES AND MIDWIVES

At the meeting of the South African Medical and Dental Council held at Johannesburg on 17-19 September 1956, the Council considered a memorandum concerning a meeting held on 2 September 1955 of representatives of the Council, the South African Nursing Council and the Department of Health to discuss (A) the administration of anaesthetics and (B) the giving of injections by nurses and midwives and (C) the carrying of morphia and pethidine by midwives for emergency use.

Under (A) the Council agreed to the following resolutions taken by the joint meeting:

'(*a*) That the training of registered midwives in the administration of gas and air analgesia should be continued and that registered midwives holding a certificate of competency in the administration of gas and air analgesia, registered with the South African Nursing Council, should be permitted to administer this as at present; and that such training be extended, where available, to pupil midwives.

'(*b*) That midwives should not be trained in the administration of anaesthetics other than as at (*a*) above, nor should they be permitted to administer anaesthetics, provided that should a medical practitioner decide that a medical emergency exists and another medical practitioner is not reasonably available, the midwife may, in the presence and under the direction and on the responsibility of the medical practitioner, administer an anaesthetic, in which event the midwife shall forthwith report the facts of the case to the South African Nursing Council.

'(*c*) That nurses should not be trained in the administration of anaesthetics nor should they be permitted to administer anaesthetics, provided that, should a medical practitioner decide that a medical emergency exists and another medical practitioner is not reasonably available, the nurse may, in the presence and under the direction and on the responsibility of the medical practitioner, administer an anaesthetic, in which event the nurse shall forthwith report the facts of the case to the South African Nursing Council.'

Under (B) the Council passed the following resolutions in place of those taken by the joint meeting:

Nurses should be permitted—

(*a*) to give hypodermic and intramuscular injections on the written instructions of a medical practitioner, but on their own responsibility;

(*b*) to give hypodermic and intramuscular injections on a verbal

instruction from a medical practitioner, provided that such instruction is subsequently confirmed in writing by the medical practitioner. Should such written instruction not be obtained she shall forthwith report the facts of the case to the South African Nursing Council.

(*c*) in an emergency to administer such injections without instructions from a medical practitioner, but she shall forthwith report the facts to the South African Nursing Council.

(*d*) to give hypodermic and intramuscular injections arising out of dental treatment under instruction of a dentist but on her own responsibility.

Under (C) the Council varied the resolutions taken at the joint meeting so that they read as follows:

1. *Pethidine*

That registered midwives should be permitted to administer pethidine to maternity cases for the relief of pain under the following conditions:

(*a*) They should only be permitted to obtain pethidine on a certificate issued by the Department of Health through its regional chief health officers.

(*b*) The amount available should be limited.

(*c*) A midwife should not be permitted to administer more than 100 mg. of pethidine to any one patient except on the instructions of a medical practitioner, in which case the medical practitioner should sign the midwife's habit-forming-drug register.

(*d*) Where a medical practitioner instructs a midwife to give pethidine it should be given from the midwife's supply, but in such cases the medical practitioner making the order must sign for it in the midwife's register.

2. *Morphia*

(*a*) That registered midwives should be permitted to carry not more than 2 × ¼ gr. ampoules of morphia, obtainable on a certificate from the Department of Health through its regional chief health officers who, in special cases, may increase the above amount.

(*b*) That the use of morphia by midwives should be limited to cases of emergency, pending the arrival of a medical practitioner.

(*c*) That the dose given by a midwife, except on the instructions of a medical practitioner, should not exceed ¼ gr., which could if necessary be repeated once only after an interval of at least 2 hours.

3. *Register*

That midwives should keep a register of habit-forming drugs.

The Council further resolved to recommend that the Medical, Dental and Pharmacy Act be amended to implement the above recommendations.

The Council did not agree to a recommendation of the joint meeting that the Council should include a reference to these matters in its ethical rules for medical practitioners.

OPTOMETRISTS

At the meeting of the South African Medical and Dental Council held at Johannesburg on 17-19 September 1956[1] the Council received reports from the Executive Committee on the subject of the training and registration of optometrists and the conditions under which they should carry on their calling.

The Council considered minutes of a sub-committee of the Executive Committee which met a deputation from the South African Optical Association on 12 April 1956, and a memorandum thereon by the President of the Council (Prof. S. F. Oosthuizen). The following is a summary of the 9 items reported on by the joint meeting, and the action now decided on by the Council in respect of each:

1. *Direct access of patients to optometrists:* In view of the evidence given to the Select Committee on the Supplementary Health Services Bill by the Department of Health and the Medical Association, the Optical Association recommended that the matter of direct access to optometrists should be dropped altogether and the evidence on the subject which the Council had tendered to the Select Committee in 1952 should be withdrawn. The Optical Association also wished changes to be made in the Council's rule that 'a registered optometrist shall not examine and supply with glasses any person in whom a pathological condition should be suspected, or children under 15 years of age, but shall refer such cases to a registered medical practitioner'.

The Council resolved to refer these questions to the Medical Association of South Africa for an expression of opinion.

2. The Optical Association considered the Council's rules for registered optometrists to be too restrictive and had therefore advised their members against registration. If the rules were suitably amended the Optical Association would encourage their members to register, and their delegates expressed the opinion that they would then be entitled to expect protection from non-registered opticians. This item the Council resolved to note.

3. The representatives of the Optical Association raised the question whether it would be possible for opticians who were registered by the Council to distinguish themselves in the eyes of the public from those who were not registered.

4. They also asked whether registered optometrists would still be able to continue their present methods of shop-front display, and not be restricted to the standard brass plate. The Council decided that items 3 and 4 should be noted.

5. The joint meeting recommended that the name of the Council's Auxiliaries Committee should be altered to 'Committee on Supplementary Health Services'. To this the Council agreed.

6. The Ophthalmological Group of the Medical Association had informed the Optical Association that the Group was not prepared to permit Group members to continue to lecture to and examine optometrists, as in the opinion of the Group it would be unethical. It was asked whether the Council could help the Optical Association in this matter. The reply was given that the Council had in April 1955 informed the Medical Association that it could see no objection to medical practitioners' lecturing and examining students taking the Optical Association's fellowship, which was recognized by the Council, or to their names' appearing in the official organ of the Optical Association. The representatives were advised to approach the Ophthalmological Group again. The Council resolved to note this item.

7. The representatives of the Optical Association stated that the Society of Opticians accepted members with a qualification of much lower standard than the Optical Association, and that the Optical Association 'could not compete with this wholesale deterioration of the standard of training in optometry', and had considered absorbing the Society of Opticians into its ranks, provided members of the latter society could give proof of a certain minimum knowledge of optometry. The representatives were informed that the Council would be unable to accept for the purpose of registration any qualification of a standard lower than that now recognized. This item the Council resolved to note.

8. The representatives also asked for the views of the Council on the intention of the Department of Education, Arts and Science to draft a syllabus for a diploma in optometry of a standard lower than that which the Optical Association were demanding. They were informed that the Department had raised the question with the Council (see below), and it was suggested to them that the Optical Association should ask the Department for the particulars that had been supplied to the Council and should submit a memorandum on the subject to the Council. This item was noted by the Council.

9. The joint committee agreed that their report should be submitted to the Council's Executive Committee, of which it was a sub-committee, which would submit it to the Council with comments and recommendations, after which the Optical Association would be further advised. The Council approved of this procedure.

DEPARTMENT OF EDUCATION, ARTS AND SCIENCE

On 20 June 1955 the Secretary for Education, Arts and Science wrote to the Council, attaching a minute, dated 21 April 1955, addressed to him by the Director of the Witwatersrand Technical College, and asking for the Council's comments on the subject of the training of opticians. The minute was as follows:

'I wish to draw your attention to the position existing at present in respect of certain courses being offered by this College, and one other organization, in preparation for the Optical profession.

'In 1945 the Medical Council offered the Opticians registration as Optometrists but due to differences of opinion regarding the prescribed ethical rules and the control of examinations this was unacceptable to Opticians. Since that time, efforts have been made by the Opticians for a bill entitling them to legal registration, on the basis of their own educational requirements and outside the control of the Medical Council. Efforts will continue to be made in this direction when the Medical Auxiliaries Bill is considered by Parliament, in the near future.

'Two groups of practising opticians are attempting to ensure recognition of their members, in the event of registration becoming compulsory, i.e. the *Optical Association of South Africa* and the *South African Society of Opticians*.

'Both bodies established examinations for admission to the membership of their respective groups, the Optical Association insisting on a three-year full-time course, its examinations being held at the end of each course; and the Society of Opticians requiring attendance in a two-year part-time course, and the passing of its examinations.

'The Witwatersrand Technical College has conducted courses in Optics since 1933, first on a two-year part-time basis but since 1947 on a three-year full-time basis, in collaboration with the South African Optical Association, utilizing for the first year of this course the facilities offered by the Pharmacy Department of this College. The numbers taking this long and relatively costly course were never large, as saturation point was soon reached in respect of those desiring to specialize in purely optical work.

'The Society of Opticians, who cater largely for the pharmacist who might wish to offer service on the optical side as well—a desirable feature in small country towns, where an optical specialist could not make a living—later approached this college with the request that it might establish part-time classes leading to the Society's examinations. The College was unwilling to do so, having gone to much expense to fit itself for the Association's requirements; also, it felt that in offering two differing standards of courses—one three-year full-time, and the other a two-year part-time—the former would be neglected, since the products of both would be equally at liberty to set up in business.

'Pretoria Technical College agreed to do this work for the Society and ran a course for a short while. Recently, the Society has established its own training school in Johannesburg, which is proving very popular, especially among established pharmacists.

'The College's larger and more costly full-time course is now faced with extinction, despite its obvious merit as one complying with the highest standards called for in overseas countries.

'The question now arises as to whether the time is ripe for the establishment of a course—full-time or part-time—leading to examinations of your Department, which would be acceptable by the government if and when the profession is registered. This would obviate the dual standards now in being, and, I am sure, would be acceptable to both bodies. This College is willing, indeed anxious, to provide tuition on either basis, as it is clear that some form of training for examinations which will carry Union-wide recognition is now becoming essential.

'I shall be glad therefore, if your Department could give some attention to the possibility of the establishment of its own National Examinations in Optometry and, if possible, prescribe the method of approach to them.

'I enclose the syllabus to which we are working at present and also previous syllabuses of the Optics Department, for your consideration.'

In July 1955 the Council's Executive Committee resolved: 'That the Secretary for Education, Arts and Science be informed that the Council welcomes the 3-year course and would be glad if the Department could conduct the examinations. It would be appreciated if the curriculum could be submitted to the Council when it had been drawn up. The Council had thus far consistently refused to recognize the qualification granted by the Society conducting the 2-year part-time course.'

On 28 January 1956 the Secretary for Education, Arts and Science wrote to the Council stating that his Department considered that a 3-year full-time course was not justified because (*a*) the scope and nature of an optometrist's work was limited, and (*b*) an entrance examination in basic sciences was also required involving at least one year's full-time post-matriculation study. The Department proposes, and submits details of, a 2 years' part-time course or one year of full-time study, and an examination, the moderators to be appointed by the Medical and Dental Council. The letter went on to ask for the Council's comments, and enquired whether the Council would be prepared to undertake the registration of optometrists possessing this qualification, 'subject to the following restrictions in regard to sight testing, viz. that the following cases be referred to an ophthalmic surgeon: (1) All children under the age of 14 years, (2) all persons with diseased or abnormal conditions of the eye, (3) cases exhibiting a high degree of myopia (more than 10 diopters), and (4) cases whose visual acuity is less than 6/6 when fully corrected'.

At the Council meeting now under report the Council, on consideration of these papers, adopted the following resolution of the Executive Committee: 'That the Secretary for Education, Arts and Science be informed that the Committee could not agree to the proposed course of training for optometrists as set out in his letter of 28 January 1956, as being equal to the course of training at present recognized by the Council in terms of its rules for the registration of optometrists. The Council has thus far held the view that it would not be in the public interest to recognize a course of training for optometrists which was of a lesser standard than the present course at the Witwatersrand Technical College, which extends over 3 years full-time study.

1. South African Medical and Dental Council (1956): S. Afr. Med. J., **30**, 968 (6 October).

RADIO-ACTIVE COBALT BOMBS AND SUPER-VOLTAGE THERAPY*

JOSSE KAYE

Chief Radiologist, Johannesburg General Hospital

Dr. Weinbren claims that there is no demand for super-voltage therapy in South Africa, and that

'. . . . *in the recent much publicized case of the little girl the patient was sent to London for treatment by Sir Stanford Cade, and not for treatment with the radio-active cobalt bomb* . . . .'

In fact, although her condition was too advanced for cobalt bomb therapy, she was referred presumably for the reason that Sir Stanford Cade's article in the Annals of the Royal College of Surgeons described a series of osteogenic sarcomas treated with radio-active cobalt and giving results far superior to any which had been obtained with any other method available previously. Dr. Weinbren asks whether we have

'. . . . *any figures to indicate that the numbers going overseas have increased because super-voltage therapy of the multi-million-volt type has become available in Great Britain* . . . .'

The answer to this question is in the affirmative. At least 2 patients from this Hospital suffering from bone tumours have attempted to obtain treatment overseas. Several of the leading E.N.T. surgeons in Johannesburg have informed me that, where the financial considerations allow, they refer their cases of carcinoma of the larynx to Great Britain for teleradium or super-voltage therapy, and that they personally would welcome the acquisition of a cobalt unit for the treatment of their malignant cases.

Thirdly Dr. Weinbren does not condemn super-voltage therapy and states,

'*On the contrary in* 1947 *I ordered a 2-million-volt machine but had to cancel the order because I could not get the radiotherapists and physicists to operate the unit safely.*'

It is noted that his personal opinion, therefore, was that the apparatus was highly desirable, so much so that he attempted to instal it, but that owing purely to his inability to obtain therapists and physicists it could not be done at the time. The lack of therapists and physicists does not exist now, 9 years later. The Johannesburg General Hospital has 3 fully-qualified radiotherapists and a fully qualified hospital physicist, and certainly such a unit could easily be installed in this hospital. One finds it difficult to see the reason why he should object so strongly to any attempt on the part of the hospital to obtain such a unit at the present time.

* Comment on articles by Dr. Maurice Weinbren (1956). S. Afr. Med. J., **30,** 520 (2 June) and **30,** 821 (25 August).

POSITION OVERSEAS

Dr. Weinbren gives the impression that super-voltage units and cobalt bombs are purely experimental and that there is only one cobalt installation of the 1,000-curie size in Europe and few super-voltage generators operating in routine hospital practice. This is completely incorrect. One commercial firm alone, viz. Atomic Energy of Canada Ltd., has installed no less than 48 cobalt units in various parts of the world, including 16 in Europe, viz. 8 in Italy, 5 in France, 2 in Switzerland, and 1 in England. In addition telecobalt units are known to be operating in Moscow, Leningrad, Kharkov, Kiev and Lvov in the USSR.

In Britain, super-voltage generators or telecurie units are in regular Hospital use in London at St. Bartholomew's Hospital, the Royal Marsden Hospital, Hammersmith Hospital, and Mount Vernon Hospital; and also at the Holt Radium Institute, the Sheffield Radiotherapy Centre, and the Western General Hospital, Edinburgh; and at least 2 other units are in the course of construction, at Leeds and at the Royal Marsden.

These 14 units represent approximately one super-voltage machine per 3,000,000 of the population, which is more or less the optimal ratio.

Similarly Dr. Weinbren quotes a report suggesting that in the United States

'. . . . *out of* 13 *installations there are only* 4 *of the* 1,000-*curie type*'.

This information is incorrect. I could enumerate at least 30 hospitals which have installed 1,000-curie sources from the A.E.C. as well as a number produced by the Picker Corporation.

Less advanced countries like India, Australia, New Zealand and Brazil all have super-voltage installations. Dr. Nathan Sacks, the radiological adviser to Natal, informs me that he is preparing estimates for his Isotope department and will press for the acquisition of a cobalt unit because megavolt therapy is an absolute necessity in any modern therapy department.

CLINICAL ASPECTS

Dr. Weinbren then goes on to state that super-voltage radiotherapy does not give improved cure-rates, and quotes an article by Blomfield to support this statement. In fact Blomfield states: 'The advantages of super-voltage X-radiation for treatment of cancer can hardly be disputed. To display the gain in survival on a statistical basis is no easy matter; to show conclusive evidence of longer survival may require many hundreds of cases with selection for treatment by random sampling. Whether such sampling is justified is a matter of opinion, for there is plenty of evidence apart from statistics to show that super-voltage X-ray is a most valuable and, indeed, a most humane form of treatment. It is possible that electron or deuteron beams may supplant super-voltage radiation for a particular type of work, but for the moment we have substantial resources in 2-million and 4-million-volt X-rays, and radio-active cobalt, increasingly available. This sort of equipment should go a long way towards meeting our requirements for the external irradiation of deep-seated tumours.' In fact an editorial in the Year Book of Radiology, 1955-1956 Series, states: 'As more and more super-voltage installations have come into use in North America and abroad, preliminary clinical data strongly suggest that in a high percentage of cases patients are better treated with this type of equipment. Previously the available generators were of such high cost as to limit their acceptance to large hospitals and universities. In the past year, however, manufacturers in Canada and the United States have made available telecobalt units utilizing rotational devices with a large opposing counter-weight baffle which greatly reduces the amount of protection required in the walls. As the result, the cost of the satisfactory super-voltage installation has been reduced to a price within the range of the average hospital or office.'

In an editorial article on Megavoltage Radiotherapy appearing in the *British Medical Journal* of 14 July 1956 the writer of the article confirms the opinions expressed by me and by members of the Radiation Therapy Department of the Johannesburg Hospital. He states: 'The advantages of megavoltage radiotherapy over ordinary deep X-ray therapy (200-250 thousand volts) are well known in a series of articles recently published by R. Morrison. G. R. Newbery and T. J. Deeley, working with the Medical Research Council's 8-million-volt X-ray machine at the Hammersmith Hospital, found that the maximum dosage was delivered at about 2 cm. below the skin surface, while the skin dose was only about 25% of the maximum. D. Greene and D. E. A. Tranter, working with the 4-million-volt X-ray machine at the Christie Hospital, Manchester, found that the maximum dose was delivered at from 0·8 to 1·2 cm. below the surface, again with a surface dose of about 25% of the maximum. Morrison and his colleagues found that the absorption in bone was reduced by more than half at 8 million volts as compared with 250,000-volt deep X-ray therapy. The figures for the cobalt-60 telecurietherapy unit, equivalent to about 3 million volts, are not very different from those obtained at the Christie Hospital, while at a level as low as 2 million volts the advantages of super-voltage radiotherapy have recently been confirmed by G. W. Bloomfield by physical measurement and also by clinical observation of 1,500 patients treated during the past 5 years.' And again: 'After working with 2-million-volt X-ray therapy we soon found that comparisons are still more difficult, because many patients who would never stay the course of radiotherapy by orthodox methods can yet be treated by super-voltage therapy.' And finally in conclusion he states: 'Even if the results show no dramatic improvement from megavoltage therapy, the sparing of much discomfort and distress to patients in the course of treatment, and the reduced risks of bone necrosis and other complications, are sufficient to mark a real advance.'

Dr. Weinbren then goes on to assert that the main function of radiotherapy is for palliative purposes and consequently elaborate treatment and apparatus are unnecessary. He states in his paper of 2 June 1956,

'. . . . *as a primary radical form of cancer therapy radiation is disappointing . . . . It plays a much greater part in palliative treatment, but the public thinks in terms of cures not palliation*'.

Since palliative therapy implies a relatively small dose of radiation, delivered merely for the suppression of symptoms with no attempt at cure, then obviously the question of dosage is crucial to this aspect. Dr. Weinbren states,

'*Although quite irrelevant to the discussion on super-voltage therapy, Dr. Cohen persists in dragging the question of dosage into the discussion . . . .*'

And he objects to Dr. Cohen's previous statement that the delivery of inadequate dosage 'is excused by reasoning that cancer is incurable anyway and that all treatment is merely palliative, or that severe radiation reactions are "bad business" as they are considered undesirable by the referring physicians.'

It is our opinion that this tendency to systematic underdosage is a direct result of the administration of purely palliative treatment in cases which should be considered curable. If we believe that radiotherapy is purely palliative, and cure is never to be attempted, then super-voltage equipment is unnecessary, for transient palliation can be achieved by means of existing apparatus with low dosage and minimal reactions. However, in three-quarters of patients seen at this hospital the disease is potentially curable with the modern technique of radical dosage. Though only half of these radically-treated cases remain permanently cured, the remainder still receive a high degree of palliation, often lasting many years. Since it is impossible to prognosticate for each individual at the outset, these results can only be achieved if all potentially curable cancer is treated radically. This unfortunately carries the added burden to the patient of prolonged painful reactions. It is in eliminating, or at least greatly diminishing, these reactions that super-voltage benefits all radically-treated patients, both those getting permanently cured and the less fortunate temporarily palliated cases. It was in this connection that Dr. Cohen, in his article in the *South African Medical Journal* of 22 June 1956, referred to Dr. Paterson's article on 'The role of radiotherapy in the treatment of malignant diseases', published in the *South African Medical Journal* of 24 December 1955. Dr. Paterson stated:

'At one time the palliative use of radiotherapy was perhaps its major contribution, and it still, indeed, remains a valuable by-product where we fail to cure. Its very usefulness, however, has perhaps blinded many to what is now the greater contribution of radiotherapy to the control of malignant disease, its real curative value in some types of neoplasia.

'In certain cancers, radiation, properly applied, can be depended on to yield a rate of permanent cure of the order of 30-50% of all cases. When, however, we look only at the earlier cases of these cancer types, cure rates are genuinely high and fully justify my use of the term "curative". Be it noted, however, that such dividends can only be earned by a high quality of technique—and of radio-

therapeutic organization. Cancer surgery today ties its successes to systematic and thought-out operations linked with high-quality supporting services, both in theatre and ward. So, too, radiotherapy might as well not be used if it is merely employed in a casual or haphazard way—"Give this patient a little X-ray please". Nowadays it is to be looked on as a specialty in which possession of real experience and real knowledge is the only condition under which it can be competently practised.

'I would place this serious incursion of radiotherapy into the curative field as a development of the last 20 years. The contributions can in a broad way be grouped under 3 main heads:

1. A few types of malignant diseases previously incurable can now be brought under control.

2. It can be used as an adjunct to surgery.

3. It provides an alternative to surgery, either because of higher cure-rates or because of superior functional results . . . .

'In the old experimental days of radiotherapy the radiologist was handed the late cases or post-operative recurrences, while surgery was given first choice, and rightly so. It was indeed a gloriously useful dumping ground! There are now certain fields in which the competent radiotherapist can offer radical curative treatment which is either simpler or better than surgery. In these fields radiotherapy should now come first if the maximum number of lives are to be saved.'

And again Dr. Paterson goes on to say, ' . . . . that where cure is the aim with these epithelial tumours of limited sensitivity the key to success is *high dosage to small volume, and that we are working at the limits of normal tissue-tolerance.*' (my italics).

It is precisely for these reasons—the possibility of cure in a proportion of cases and the fact that dosage is crucial and reactions necessarily severe—that we have insisted that super-voltage radiotherapy, giving as it does milder reactions and less distress to the patient, must give better results. It is true that improved figures for survival cannot be produced at present and, indeed, to obtain statistically significant results will require decades of statistical correlations upon thousands of patients, but the obvious immediate advantages reported seem sufficiently adequate reasons for undertaking this moderate investment in equipment.

Dr. Weinbren also makes a long extract out of context from a report by Dr. Constance Wood on a comparison between 200-KV X-ray therapy and 'wavelengths corresponding to 2 MeV' (Dr. Weinbren's wording), making it seem that Dr. Wood was comparing conventional with super-voltage radiotherapy. In actual fact this comparison did not concern super-voltage therapy at all, but merely a 15 g. teleradium unit. The fact that the radium unit, with all its disadvantages, showed no results superior to that of the X-ray beam is not surprising, but it bears no relationship whatsoever to the super-voltage problem, except in so far as she extrapolates from this datum to infer that 'there will be no spectacular improvement in cure rate by the use of technical advances inherent in super-voltage therapy.'

ECONOMIC ASPECTS

Dr. Weinbren then goes on to emphasise the economic difficulties in the use of the telecobalt or super-voltage radiation. He states that the housing of this unit would cost more than the unit itself. This might have been true when Dr. Weinbren investigated the problem of super-voltage in 1947, but with modern developments it no longer applies. We have been assured by Atomic Energy of Canada, who now have agents in Johannesburg, that a telecobalt unit could be installed in existing rooms in this hospital with little or no additional construction and I am sure that this claim is well founded.

Dr. Weinbren states that the running costs of these units are prohibitive. We have gone into the economics of this problem and it is found that the running costs of super-voltage units are even lower than that of conventional therapy. Telecobalt, for example, works out at approximately 6/- per treatment. He states that there are enormous difficulties in transportation of the cobalt:

'*It would be necessary to send from overseas a complete new head containing the cobalt which would have to be exchanged with the old head.*'

This is incorrect. The agents from this Canadian firm advise us that they would undertake all the problems of transportation and replacement of decayed isotope for approximately 1,200 dollars shipping and installation costs. This service of course would only be required at intervals of about 5 years, on the assumption that caesium 137 will not be available. If caesium does become available its life of over 20 years would make replacement virtually unnecessary.

He states that a single physicist could not keep a radio-active cobalt unit in operation. This is incorrect. Of the hundreds of units which have now been installed, most are run purely by radiographers and there are no physical problems concerned with it beyond the initial calibration. In fact the total cost of installing and operating a telecobalt unit ranges between £13,000 and £17,000 initial cost plus £3,000 for re-activation of the source in 5 years time, with practically no additional building beyond the lead-lined 18-inch brick walls already available.

Dr. Weinbren then goes on to emphasise the difficulties concerned with caesium as an alternative to cobalt. We have considered this problem from the point of view of its possible advantages in the future, i.e. in about 5 years' time. The difficulties of obtaining caesium at the present moment are irrevelant. Whether the cobalt would in fact be replaced by caesium in 5 years' time, or by some other isotope, or whether the whole set-up might not be modified is not relevant to the present discussion.

It should also be stressed that in considering the economic aspects of super-voltage therapy the question of the length of time a patient remains in hospital becomes a serious consideration. With the ordinary therapy with a voltage of 200-250 thousand certain patients may remain in hospital up to 4 weeks during the course of the treatment, and most of these cases are kept in hospital for an additional 2-3 weeks in order to cope with the severe reactions attendant upon radical therapy with the conventional X-ray unit. The utilization of super-voltage therapy, apart from the sparing of much discomfort and distress to patients and the reduced risks of bone necrosis and other complications, will consequently reduce the over-all beddage time almost by half, allowing many more patients to be treated. This is a very real saving both to the Transvaal Provincial Administration and to the Johannesburg Hospital in particular, where there is such an acute shortage of beds.

PERSONAL RECRIMINATIONS

Dr. Weinbren's next concern is whether our staff is

' . . . . *sufficiently skilled and experienced, clinically and radiotherapeutically, in the techniques required for the proper operation of a super-voltage unit* . . . . '

He then goes on to cast aspersions on the qualifications, status and competence of the radiotherapy staff of this hospital. In this respect he maligns the radiotherapists concerned, particularly the senior radiotherapist. We have no intention of participating in these recriminations, but can point out that members of the radiotherapy staff all possess qualifications issued under stringent modern standards. The senior radiotherapist's experience in radiotherapy extends over 11 years, and both the senior radiotherapist and the physicist have in fact had practical experience in large radiotherapy centres overseas.

The remainder of Dr. Weinbren's comments concern a purely imaginary disagreement between Dr. Shapiro and our present senior radiotherapist on the treatment of breast cancer, which has no relevance whatever to the topic of super-voltage radiotherapy. In this connection he has misinterpreted the meaning of the publication and assumes that a difference in technique in the two reports implies a radical change in this department's policy. In actual fact the first of these reports, that published in 1950, was prepared by the senior radiotherapist while he was working at a hospital in London for the purpose of standardizing dosage for breast cancer in that hospital. In the Johannesburg Hospital the 26-day routine has been in use for the past 6 years; it was developed jointly by Dr. Shapiro and Dr. Cohen without any disagreement on principle, and the results have been extremely satisfactory as far as local recurrences are concerned. Statistical reports are in preparation and preliminary analysis seems to indicate that our end-results are not inferior to those published in other centres. Dr. Weinbren's references to teleangiectasis, skin and rib necrosis, pulmonary fibrosis and so on are based on no information other than the well-known fact emphasised by all competent radiotherapists that the administration of intensive radical therapy for malignant conditions is inevitably associated with a small incidence, approaching 2%, of high-dosage effects.

DOCTORS IN THE FEDERATION OF RHODESIA AND NYASALAND

The following notice has been issued for the Ministry of Health, Rhodesia and Nyasaland (P.O. Box 8093, Causeway, Salisbury, Southern Rhodesia):

All doctors contemplating entering medical practice in the Federation of Rhodesia and Nyasaland, whether joining a practice or buying a practice, should note that the privilege of entry to Government Hospitals in the Federation for the treatment of private patients is, in fact, a privilege and not a right, and that existing privileges are not automatically transferred to the incoming practitioners, nor are they saleable assets in existing medical practices.

Medical practitioners contemplating entering private practice in the Federation are earnestly requested to make careful enquiries about what their position would be before they take any major step towards emigrating to the Federation.

The situation in some of the main centres is now so acute that newcomers are unlikely to be granted full privileges of entry for a long time to come.

PASSING EVENTS : IN DIE VERBYGAAN

Union Department of Health Bulletin. Report for the 7 days ended 20 September 1956.

Plague, Smallpox, Typhus Fever: Nil.

Epidemic Diseases in Other Countries.

Plague: Nil.

Cholera in: Rangoon (Burma), Bombay, Calcutta, Pondicherry, Visakhapatnam (India), Dacca (Pakistan), Nairobi (Kenya).

Typhus Fever in: Baghdad (Iraq).

* * *

Leprosy Research. Government Notice No. 1730 of 21 September 1956, published in the Government Gazette, says the Minister of Health has been pleased to appoint the following as a committee to advise the Government regarding leprosy research and other matters relating to leprosy in the Union: Dr. J. J. du Pré le Roux, Secretary for Health and Chief Health Officer for the Union (Chairman); Dr. J. A. Orenstein, Chief Medical Officer, Rand Mines Limited; Dr. E. H. Cluver, Director, S.A. Institute for Medical Research; Prof. H. W. Snyman, Head, Department of Internal Medicine, University of Pretoria; Prof. I. Gordon, Professor of Pathology, University of Natal; Prof. J. Barnetson, Professor of Pathological Anatomy, University of Pretoria; Dr. R. Turner, Government Pathologist, Cape Town; and Prof. G. Elliott, Head of the Department of Medicine, University of the Witwatersrand. The foregoing appointments are for a period of 5 years with effect from 1 October 1956, the Committee to meet annually or more frequently as convened by the Chairman.

REVIEWS OF BOOKS : BOEKRESENSIES

MINING MEDICAL SERVICE—ANNUAL REPORT

Anglo-American Corporation of South Africa, Ltd. Medical Consultant's Report for 1955. By J. H. G. van Blommestein, *D.S.O.*, M.B., Ch.B., D.P.H., D.T.M. & H. Pp. 56.

Contents: Group Medical Organization. Hospital Accommodation. Statistics. Epidemiology. Laboratory Services. Medical Services. Health Centres. Native Labour Summary. Mining Accidents. Lost Shift Rates. Morbidity—Disease. Accidents. Mortality. Pulmonary Tuberculosis. Silicosis. Pneumonia. Respiratory Diseases. Hospital Costs. Compound Feeding Costs. Gold Mines—Reef, O.F.S. Collieries. Diamond Mines. Rhodesian Mines.

Dr. van Blommestein reports that considerable expansion in medical services on Anglo-American Corporation Group mines took place during 1955.

Effort is particularly directed to the prevention of disease and towards maintaining the environment of the workers in a sanitary state.

A feature of the year's work was the establishment of several new health centres at Wankie Colliery in Southern Rhodesia, at the Nkana, Nchanga and Broken Hill mines in Northern Rhodesia, and in the Orange Free State goldfields.

These health centres have been established primarily for the dependants of African workers and are designed to offer facilities for out-patients, normal midwifery, antenatal and postnatal work, and the feeding of children in the lower age-groups. They offer a protective as well as a remedial health service. They will replace the old-style clinics, which were felt to be inadequate to meet the needs of a large, somewhat ignorant section of the population, and which, in most cases, functioned only as remedial agents. It is hoped to develop a personal health service at these centres and to sponsor health education; also that they will function as a social and civilizing influence for the African population.

Africans are making increasing use of the medical facilities available. Whereas a few years ago nothing would induce pregnant African women to go to hospital except when *in extremis*, today the maternity services are being used to the fullest extent for normal deliveries.

The introduction of antibiotics for the treatment of pulmonary tuberculosis among African workers has also had encouraging effects. They have become aware of the fact that treatment now offers good prospects of a cure, and there is an increasing demand on the part of patients to defer repatriation in favour of hospitalization.

During the year a joint hospital at Wankie Colliery, consisting of 250 beds for Africans and approximately 40 beds for Europeans, was completed, and also a new African hospital at the Consolidated Diamond Mines of South West Africa, and a mobile clinic for Africans at Broken Hill mine. Extensions were made to the Ernest Oppenheimer Hospital for non-Europeans, at Welkom, where a maternity and children's wing has now been completed.

A slight increase is reported in 1955 in pulmonary tuberculosis (both new cases and deaths) in all sections of the Group, with the exception of the diamond mines. The silicosis rate is less on the O.F.S. gold mines than on the Rand; this is partly attributed to the fact that every entrant to the mines has had to undergo a pre-employment radioscopic examination.

There was a general decrease in accident rates throughout the Group, and investigations are being conducted with a view to reducing the incidence rates still further. The largest number of accidents were caused by hanging, trucks and rocks on the Reef mines, and locomotives and rocks in the Orange Free State.

At the end of 1955, the Corporation administered 18 Native hospitals, containing 2,735 beds, and employed 55 full-time and 5 part-time medical officers. Eleven health and anti-malarial officers were also employed.

ATLAS OF TUMOR PATHOLOGY—TUMORS OF SOFT TISSUES

Atlas of Tumor Pathology. Tumors of the Soft Tissues. By Arthur Purdy Stout, M.D. Section II—Fascicle 5. Pp. 138 with 78 illustrations. $2·00. Washington: Armed Forces Institute of Pathology. 1953.

Contents: 1. Introduction. 2. Benign Tumors and Tumor-Like Proliferations. 3. Malignant Tumors of the Soft Tissues. 4. Diagnosis and Treatment. References.

This is a very good account of tumours of soft tissues and few pathologists can read or consult it without. benefit. Tumours of nerves and of epithelium are excluded, but the range of mesenchymal tumours is wide enough without them, and the scope and

usefulness of the book is increased by the inclusion of some tumour-like or doubtfully neoplastic lesions. The illustrations, mainly photomicrographs, are of high quality, and the 21 in colour are more helpful than in many other fascicles in this series, as colour is as a rule used where it does have advantages over black and white. The references are put together in sections at the end of the book, with no loss in convenience and a considerable saving in space.

Dr. Stout has made a special study of these tumours and has packed into the text, which is more abundant than usual, a great deal of information as well as his personal opinions. He is a firm believer in the use of tissue cultures to determine the histogenesis of the more obscure tumours. He prefers the name fibrous xanthoma to the more fashionable one of sclerosing haemangioma, and stresses the importance of accurate histological diagnosis of the malignant varieties. He has seldom found frozen sections to be sufficiently accurate in these mesenchymal tumours and prefers to have treatment delayed a day or two until a paraffin section can be studied. He concludes with a brief but instructive section on the treatment of these tumours.

This can be strongly recommended to pathologists and surgeons as a valuable survey of a group of tumours which are less well diagnosed and less well treated than those of many internal organs.

J.G.T.

LABORATORY DIAGNOSIS OF CANCER OF THE CERVIX

The Laboratory Diagnosis of Cancer of the Cervix: Edited by F. Homburger, M.D. and W. H. Fishman, Ph.D. Pp. 70. Basle: S. Karger AG., 1956. (Sole Distributors: P. B. Mayer, Medical Bookseller, P.O. Box 713, Cape Town.)

Contents: Introduction. Epidemiology of Cancer of the Cervix. A Gynecologist's Evaluation of Methods of Early Cancer Diagnosis. Fundamental Studies of the Cell: Observations Underlying the Concept of Cancer-Cell Detection by Automatic Scanning Microscopes. The Cytologic Prognosis of Cancer of the Cervix Treated by Radiation. Cytologic Prognosis in Cancer of the Cervix treated by Surgery or Radiation. Beta-Glucuronidase in Cancer Diagnosis and Endocrinology. Clinical Aspects of Vaginal Fluid Beta-Glucuronidase Activity in the Diagnosis of Cervical Cancer. Discussion of the Papers on Beta-Glucuronidase. Method for Determining Vaginal Fluid Beta-Glucuronidase.

The title of this slim volume is rather misleading. It is not concerned with the histological diagnosis of carcinoma of the cervix or with exfoliative cytology, but deals with other and more debatable laboratory tests. The editors point out that in the USA 'the general use of the cytological methods of Papanicalaou encounters the insurmountable obstacle of lack of skilled manpower sufficient for its full application in population screening'. They suggest that simpler methods of screening should be developed, such as the estimation of beta-glucuronidase and the use of electronic devices for scanning cervical smears.

The book takes the form of 9 papers delivered at a symposium and some of the discussions are given. The varied nature of the papers listed above indicates the difficulties in giving the book a comprehensive title, and incidentally in reviewing it. After reading these articles one is left with a feeling of disappointment. The electronic scanning microscope is merely mentioned as being in process of manufacture, and the wide variations in beta-glucuronidase content of vaginal secretions make it of limited value as a screening test. Abnormally high values for this enzyme are recorded in most but not all of the cases of carcinoma of the cervix examined, but are also found in about half of post-menopausal women, in pregnancy, and in a variety of gynaecological complaints from trichomonas vaginitis to pelvic gonococcal infection. Nor is the test to be described as a simple one. But the book does indicate the necessity for screening tests for the early diagnosis of carcinoma of the cervix and some of the efforts that are being made towards this end.

J.G.T.

CLINICAL LABORATORY METHODS

Clinical Laboratory Methods and Diagnosis. Volumes I and II. Fifth Edition. By R. B. H. Gradwohl, M.D., D.Sc. Pp. 2,766. 765 Illustrations. Colour Plates 52. South African Price £16 7s. 3d. per set. St. Louis: The C. V. Mosby Company. 1956.

Contents for Volume I: I. General Considerations. II. Urine Analysis. III. Blood Chemistry. IV. Hematology. V. Blood Groups and Transfusion. VI. Gastric Analysis. *Contents for Volume II:* VII. Examination of Puncture Fluids. VIII. Feces. IX. Special Tests. X. Bacteriologic Applications to Clinical Diagnosis. XI. Medical Mycology. XII. Parasitology and Tropical Medicine. XIII. Serology. XIV. Tissue Cutting and Staining. XV. Toxicologic Technic. XVI. Basal Metabolism. XVII. Electrocardiography.

This work, in 2 volumes, is one of the most comprehensive books available to clinical pathologists today. In its 2,451 pages of text it attempts to cover practically the whole of the routine work which a clinical laboratory can reasonably be expected to attempt and answer accurately. It is fair to say that it has succeeded in this ambition and has done it as well as most and better than many.

The revision has been painstaking and thorough. The chapters on blood groups and transfusion are especially commendable and practical, but might be still further improved by some guidance on the quantities of blood and plasma to be given, especially in infants. The section on blood chemistry is as up-to-date as will be found in any standard text-book, and particular emphasis has been laid on electrolytes, their estimation (there is a useful section on flame photometry) and the interpretation of results for the benefit of the patient. Paper chromotography is also introduced and its present usefulness in the laboratory explained and applied. Modern terminology such as milli-equivalents and ml. (instead of c.c.) is adopted. Apart from the introduction of new techniques the standard and well-tried methods have been scrutinized and improvements adopted when appropriate; they constitute a tribute to the vigilance with which the volumes are edited.

Some of the illustrations could be improved, but these are minor criticism of a book which should be on the shelf of all clinical laboratories.

H.W.C.

ATLAS OF TUMOR PATHOLOGY—TUMORS OF THE STOMACH

Atlas of Tumour Pathology. Tumors of the Stomach. By Arthur Purdy Stout, M.D. Section VI—Fascicle 21. Pp. 104 with 66 illustrations. 81·75. Washington: Armed Forces Institute of Pathology. 1953.

Contents: 1. Introduction. 2. Benign Tumors. 3. Malignant Tumors. 4. Treatment.

As an atlas this shows most of the good points and one of the defects which characterize this admirable series. The photomicrographs are generally well chosen and reproduced, and great care has been taken in the selection of magnifications, with the very desirable and not so usual result that the accompanying legends are factually correct—they do show what is intended. But the same cannot be said about the 13 coloured illustrations. They are all colour photographs of resected specimens, so disfigured with high lights as to suggest a violent snowstorm, and so shadowless that they are flat and quite uninformative. One has but to compare any of these red specimens with the black and white of Fig. 15 to see how much has been lost. The author has intentionally given a disproportionate space to gastric neoplasms other than carcinoma, but we feel that this has gone too far when ulcer-cancer is dismissed very curtly in the text and no illustrations are given. By contrast there are two illustrations of a rare lesion inappropriately called eosinophilic granuloma, but perhaps this does serve a purpose in that it appears to be a healed sub-acute ulcer and to have nothing to do with ordinary eosinophilic granuloma of bone.

Within the limits of what is basically an atlas, however, the author succeeds in giving both a reasonably full discussion of the tumors illustrated and his own opinion on debatable matters. He admits that the most common morphological variety of cancer of the stomach does not fall into the ordinary classification and is of no specific type. He is of the opinion that leiomyoma is often misdiagnosed as fibroma or neurilemmoma, and stresses the capsule of the latter as an important feature in its recognition. He found only 6% of surgically resected gastric cancers with appearances suggestive of ulcer-cancer, but we doubt if that is an adequate ground for concluding that chronic peptic ulcer of the stomach cannot be regarded as a pre-cancerous lesion, because the association is so uncommon. The lymphoma group is dealt with adequately and all sections are accompanied by up-to-date lists of references.

J.G.T.

TSETSE FLIES

The Natural History of Tsetse Flies. An Account of the Biology of the Genus Glossins (Diptera). By Patrick A. Buxton, C.M.G., F.R.S. Pp. 816 + xviii, with 47 plates and 165 figures. £4 4s. 0d. London: H. K. Lewis & Co. Ltd. 1955.

Contents: 1. Anatomy and Systematics. 2. Geographical Distribution. 3. Feeding, Digestion and Excretion. 4. Metabolism. 5. Sense Organs: Discovery of Host. 6. Sources of Food. 7. Movement and Rest. 8. Tsetse and Climate. 9. Tsetse and Vegetation. 10. Reproduction. 11. Larva and Puparium. 12. Causes and Death. 13. Populations of Tsetse. 14. Control of Tsetse. 15. Tsetse and Trypanosomes. 16. Tsetse in Relation to Disease. Appendices. References. Index. Plates.

Many authorities have held that tropical diseases have been primarily responsible for the slow development of Central Africa. Few people would disagree with Professor Buxton that trypanosomiasis, both of man and his domestic animals, is one of the major problems. It has been the subject of many independent lines of research, not only by medical and veterinary workers, but also by entomologists and ecologists, so that up to the present it has been difficult to find out what had been done and what had not. Much time has been lost in repeating crucial experiments in the laboratory and a great deal of money has been spent in applying outmoded methods of control in the field. It was thus urgently necessary for all the threads of research to be drawn together by an expert so that the pattern was clear to all. This Professor Buxton has now done, and his authoritative book will long remain a standard work of reference, not only for the entomologist, as the title rather modestly suggests, but for all who may be interested in the general subject of trypanosomiasis.

The book deals first with tsetse flies and gives a beautifully illustrated account of the anatomy, physiology and reproduction of the genus *Glossina*, with useful keys for the identification of adult flies and puparia. The ecology of the different species is given in detail, with maps showing distribution in relation to climate and vegetation. There is a critical account of what is known of the effect of microclimates and the presence of man, domestic animals and wild game on the movement of tsetse flies. On this basis the control of the vector of trypanosomiasis is discussed.

Almost one-third of the text is devoted to trypanosomes—their systematics, their life cycles and the epidemiology of diseases they cause in man and domestic animals. An interesting section is devoted to transmission of *Trypanosoma* by vectors other than *Glossina*. There are valuable appendices showing the standard methods used in tsetse-fly research and an excellent series of photographs to illustrate the natural habitats of the different species. The index is adequate and there is a valuable though selected series of references.

When taking up a book of this size one rather expects to be overwhelmed by a mass of indigestable and frankly boring detail. It was a pleasant surprise to find that this has been avoided. The style is lucid and the whole book makes very interesting reading, often enlivened by quotations from the reports of individual workers.

J.H.D.

ATLAS OF BONE-MARROW PATHOLOGY

An Atlas of Bone-Marrow Pathology: Second Edition. By M. C. G. Israëls, M.Sc., M.D., F.R.C.P. Pp. x + 85, with illustrations. 30s. London: William Heinemann Medical Books Ltd. 1955.

Contents: Introduction. I. Nomenclature and Development of the Blood Cells. II. Technique. III. The Morphology of the Marrow Cells. IV. The Normal Bone-marrow Picture. V. Bone-marrow Changes in Disease. VI. Bone-marrow in Infants and Children. VII. Differential Diagnosis and Indications for Sternal Puncture. Bibliography. Index.

For those to whom the field of haematology and bone-marrow pathology are charted oceans this book may well be inadequate; but for those still navigating the difficult approaches in the interpretation of bone-marrow smears, here is an excellent pilot.

The introductory chapters are perhaps rather skimped, but the main object of this short volume is to be an 'atlas' and therefore these chapters are only added for the sake of completeness. The author very wisely adheres to the accepted and well-established nomenclature. His approach is a sound one. Very correctly he ays initial stress on the morphology of the different cells likely to be encountered, before going on to describe the various disease patterns. Throughout he emphasizes the correct perspective in which bone-marrow biopsies should be viewed. Although encouraging frequent marrow-punctures. he points out that it is not a final court of appeal, but a useful aid to the complete diagnosis.

An atlas means pictures, and full credit must go to the really first-class pictures of Miss D. Davison and their excellent reproductions, without which this book would not be the success it is.

The author states: 'This volume sets out to provide an authoritative, accurately-illustrated account of the bone-marrow in health and disease for the guidance of physicians and pathologists'. In this it succeeds—a very useful book to have near one's microscope.

I.D.H.

GERIATRIC NURSING

Geriatric Nursing. Second Edition. By Kathleen Newton, R.N., M.A. Pp. 424. Illustrated. St. Louis: The C.V. Mosby Company. 1954.

Contents: Unit I. General Background. 1. Introduction. 2. The Nurse and the Patient. 3. Basic Socio-psychologic Needs. 4. Employment and Economic Security. 5. Housing in Health and During Illness. *Unit II. Nonspecific Considerations.* 6. General Hygiene. 7. Nutrition. *Unit III. Clinical Nursing.* 8. Special Treatments. 9. Anesthesia and Operative Care. 10. Nursing in Disease of the Gastrointestinal Tract. 11. Nursing in Cardiovascular Renal Disease. 12. Nursing in Diseases of the Ear, Nose, and Throat. 13. Nursing in Diseases of the Chest. 14. Nursing in Diabetes Mellitus. 15. Nursing in Diseases of the Skin. 16. Nursing in Diseases of the Eye. 17. Neurologic Nursing. 18. Psychiatric Nursing. 19. Orthopedic Nursing. 20. Urologic Nursing. 21. Gynaecologic Nursing.

In the second edition of this excellent book on Geriatric Nursing one is again struck by the very real knowledge of her subject that the author displays, as well as the great care she bestows on her work. Every chapter has been brought up to date and, in as far as they bear on nursing, new therapeutic measures have been dealt with.

The first part of the book deals with the special needs of the aging person, both in sickness and in health, with both understanding and sympathy. The basic needs of housing, home care, employment, suitable companionship and economic security, and other socio-psychological needs, have been carefully dealt with, and this should be of inestimable value to readers who, even if not qualified nurses, are entrusted with the care of aged people.

The second and third parts deal purely with the science and practice of nursing. Each chapter treats of the diseases of one specific part of the body. Naturally, a great deal that Miss Newton discusses in this section of the book is applicable to patients of any age, but she never lets an opportunity slip of pointing out the special needs of the aged patient. Unfortunately much of the excellent technique of geriatric nursing that the author advocates can only be carried out in hospitals, as no private houses have the necessary equipment.

The photographs which illustrate the text are good of their kind, but not, I think, essential, for Miss Newton's text is admirably understandable and written with the simplicity that only deep knowledge of one's subject makes possible.

This is a book to be heartily recommended to all who have to do with care of the aged, and it is a very useful text-book for nursing schools where geriatric nursing forms part of the curriculum.

L.B.

YAWS, PINTA AND BEJEL

World Distribution of Spirochetal Diseases. Plate 15. 1. Yaws, Pinta, Bejel. $1.25. New York: American Geographical Society. 1955.

This is an excellent map (with several clinical photographs) of the world distribution of yaws, pinta and bejel, prepared by the American Geographical Society with the support of the Office of Naval Research, from information published mainly since 1950, and from the Technical Bulletins of the United States War Department. The global distribution of these diseases is clearly illustrated and an attempt has been made to correlate it with altitude, temperature and humidity and with the nature of the soil.

On the reverse side is a bibliography of the sources of information used by the cartographer in the preparation of this useful map.

A.K.

DIABETES

A Modern Pilgrim's Progress for Diabetics. By Garfield G. Duncan, M.D. Pp. xiii+222. $2·50. Philadelphia and London: W. B. Saunders Company. 1956.

Contents: 1. We Embark on a Charted Course. 2. What is Routine to Some is Pioneering for Others. 3. An Instructive Crisis and an Initial Indoctrination. 4. Some Qualifications of a Charioteer. 5. Those Who Dance Must Pay the Fiddler. 6. Into the Valley of the Shadow. 7. There Are Those Who Conform, and Those Who Rebel. 8. Some Valleys and Some Peaks. 9. The Forum. 10. Troubled Waters. 11. Group Discussion on Dietary Principles. 12. Little Ripples on Calm Pools. 13. Hospital Ward Rounds. 14. Looking Ahead—And a Camp for Diabetic Children. 15. My Cup Runneth Over. 16. Postlude—Five Years Later. Appendix. Glossary. Index.

By following the fortunes of a diabetic social worker at a diabetic clinic, the reader is introduced to various types of diabetic patients. The story reads like a novel and in a simple, easy fashion a vignette of each patient is given and the symptoms, complications, and treatment are discussed. Difficulties which the patients encounter are dealt with and the danger signs are described.

One can follow the workings of the clinic, with its director, medical staff, nurses, dietitians and social workers all cooperating together for the comfort of the patient.

The exchange system of diet as recommended by the American Diabetes and Dietetic Associations is used at the clinic, and in an appendix the food tables are given *in extenso*.

The appendix is made more valuable by containing instructions for the patient on how to inject insulin and how to test urine for sugar and acetone. The care of injuries of the skin and care of the feet are discussed. Recipes for special dishes are given.

This little book can be said to cater for the patient who takes an interest in his diabetes, for the medical student, and for the medical practitioner. All will find something to interest them in it. The patient will find his own type of case in one of the characters and will be able to follow its fortunes; the medical student and practitioner will find plenty to interest them in the symptoms, treatment and diet tables. While one may not agree with the extra night-dose of long-acting insulin which the author seems to employ very frequently, there is a good deal that is interesting in this little book, which discusses diabetes in a novel way.

T.S.

CORRESPONDENCE : BRIEWERUBRIEK

MEDICAL REPRESENTATIVES

To the Editor: The scurrilous attack on conscientious *bona fide* medical representatives by your correspondent, who uses the nom-de-plume of *Physician* in your issue of 1 September 1956, should not be allowed to go unchallenged.

Far from wasting his time, these well-informed men, representing the most reputable pharmaceutical firms in South Africa and the rest of the world, make available to the busy practitioner a digest of the latest reliable therapeutic information. The so-called factory literature and sales talk (which your correspondent so disparages) emanates from research organizations whose expenditure on pure research in the medical field far exceeds the combined investments made by universities and other research organizations. It is to these commercial undertakings that we are indebted for many of the most important advances in the treatment and prevention of disease.

I invite your correspondent to instance chapter and verse for his unsupported allegations that these professional men press upon our colleagues unknown 'nebulous and ephemeral preparations' (whatever such things may be) in an improper manner for unwarranted and unethical 'constant experimentation on our patients'.

It has been my consistant experience that the information provided by these well-informed professional men is provided in a most proper manner, and I am always left free to consider the position myself and to make my own decisions.

I consider the services of these medical representatives sufficiently useful to have instructed my receptionist to show these professional men the courtesy of making appointments when they indicate that they wish to see me. The practice of this courtesy saves time for both of us and ensures that the representative is given a fair and adequate opportunity of communicating his information.

G. W. Schepers

63 Kingsway
Auckland Park
Johannesburg
17 September 1956

DRUG COMPANIES' LITERATURE

To the Editor: I should like to suggest a solution to the 'Mail bombardment' aspect of the 'Medical Rep.' problem.

Certain drug companies, in addition to the large multi-coloured, eye-catching, basket-filling pamphlets, occasionally send out neat, printed cards with concise detailed information about the drugs they wish to advertise. These are about the size of a playing card, and have a protruding tag at the top border which makes it ideal for a small neat filing system.

Would it not be possible for all the companies to get together and standardize all their literature, so that every doctor would receive nothing more than a small card, which he can read easily and file neatly on his desk for later use. This would ensure that large quantities of brightly-coloured, expensive paper would not be tossed straight into the waste-paper basket and would, I am sure, be quite a financial saving for the drug companies concerned.

Cluttered-up

25 September 1956

BLOOD SEGREGATION

To the Editor: Would you please be good enough to publish the following resolution, which was passed at a meeting of my Council recently:

The Medical Graduates Association of the University of the Witwatersrand views with considerable regret the Medical Council's decision to acknowledge and acquiese in the Central Government's decision to enforce the labelling of blood according to race, since in our opinion there is no scientific foundation for such discrimination.

J. Teeger
Hon. Secretary

Medical Graduates Association
University of the Witwatersrand
Medical School
Hospital Street
Johannesburg
27 September 1956

SERVICE FOR DOCTORS

To the Editor: May I ask the hospitality of your columns to draw the attention of the members of the medical profession to the Service for Doctors to be held in St. Stephen's Church, Pinelands, Cape, on Sunday 14 October at 7.30 p.m.?

A similar service was held last year and was so warmly welcomed by so many that I feel another service this year is justified.

The purpose of such a service is two-fold. On the one hand I hope it may provide an opportunity for many engaged in the profession of medicine to come together to unite in a service of prayer and dedication for the work in which they are engaged and the patients with whom they are concerned. On the other hand I hope that many who are profoundly conscious of a deep debt of gratitude for the benefits they have received through medicine will find in this service an occasion when they too may gather together to give thanks and to pray for those through whose skill and devotion they have received so much.

I am willing to reserve places for any who wish, if they will let me know either by letter or by telephone ('phone 6-8856).

Leslie A. Davis

St. Stephen's Rectory
Pinelands
2 October 1956